

Authentic



SCIENCE FICTION MONTHLY 1/6

Nº49

This month's
FEATURED NOVEL

LOGIC
by E.C. TUBB

On the Sun's doorstep-Mercury

Short Stories by: **E. EVERETT EVANS, J. BURKE, DAN MORGAN.**

Features by: **W. W. BYFORD, B.Sc., PETER SUMMERS.**

VOLUME I No. 49

ONE SHILLING and SIXPENCE

Authentic

SCIENCE FICTION MONTHLY

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H. J. CAMPBELL *Writes...*

Bit of a change this month. A seemingly significant number of readers have been pegging away at me to publish only short stories; no long 'uns. Well, I thought I'd show you what it's like that way. See what you think. This is not a permanent alteration—I shall still publish long stories quite frequently, but every now and then, as now, I shall give you a batch of shorts. Unless you shout me down, of course.

A nice line-up this month, I hope you will agree, from authors you know well. E. C. Tubb, who is becoming more famous every day, has turned us out a pleasantly-rounded little satire, *Logic*, in the robot field. Dan Morgan, an up-climbing author if ever I saw one—spreads over a wider canvas in his *Forgive Them . . .*, a story in mature

and thoughtful vein. Jonathan Burke, one of our "regulars," lets his pen play a variation on the last-man-alive theme in *Asteroid Crusoe*. E. Everett Evans wrote his amusing piece, *Insomnia Cure*, especially for us. I hope you appreciate it.

Richard Wilson makes a welcome reappearance in our pages with one of those stories that leave you with an odd feeling at the base of your mind. Unthinking people, of whom there must be very few among *Authentic* readers, will level the deadly accusation of "fantasy" at Edmund Cooper's *Jar of Latakia*. Others, more accustomed to think before they speak, will be able to see why this story meets the requirements of this magazine. It is science fiction. The Great Campbell has said so!

So much for fiction. The departments seem more or less up to their usual standard. I don't doubt you'll tell me if you think they are not. The Liverpool Group is the one that gets a write-up this issue. (Any club wanting a similar "plug" should send me details. All part of the service.) W. W. Byford, a contributor who has been long absent from these pages, returns with a popular piece on *Power*—all about what makes things move the way they do. *March of Science* takes you, as usual, on a short trip behind the scenes of science as it is currently practised. Peter Summers turns up again with an article on the relation between brain and body. The new series on scientific method, by Frank Wilson, starts in this issue. The Great Men of Science series moves on to Galileo. Book reviews, fanzine reviews and one or two ads. complete the picture. Like it?

By the way, make sure you read about our new competition on page 70. Here's a chance to add half a dozen good books to your library and to break into print at the same time. 'Bye now.

OUR COVER

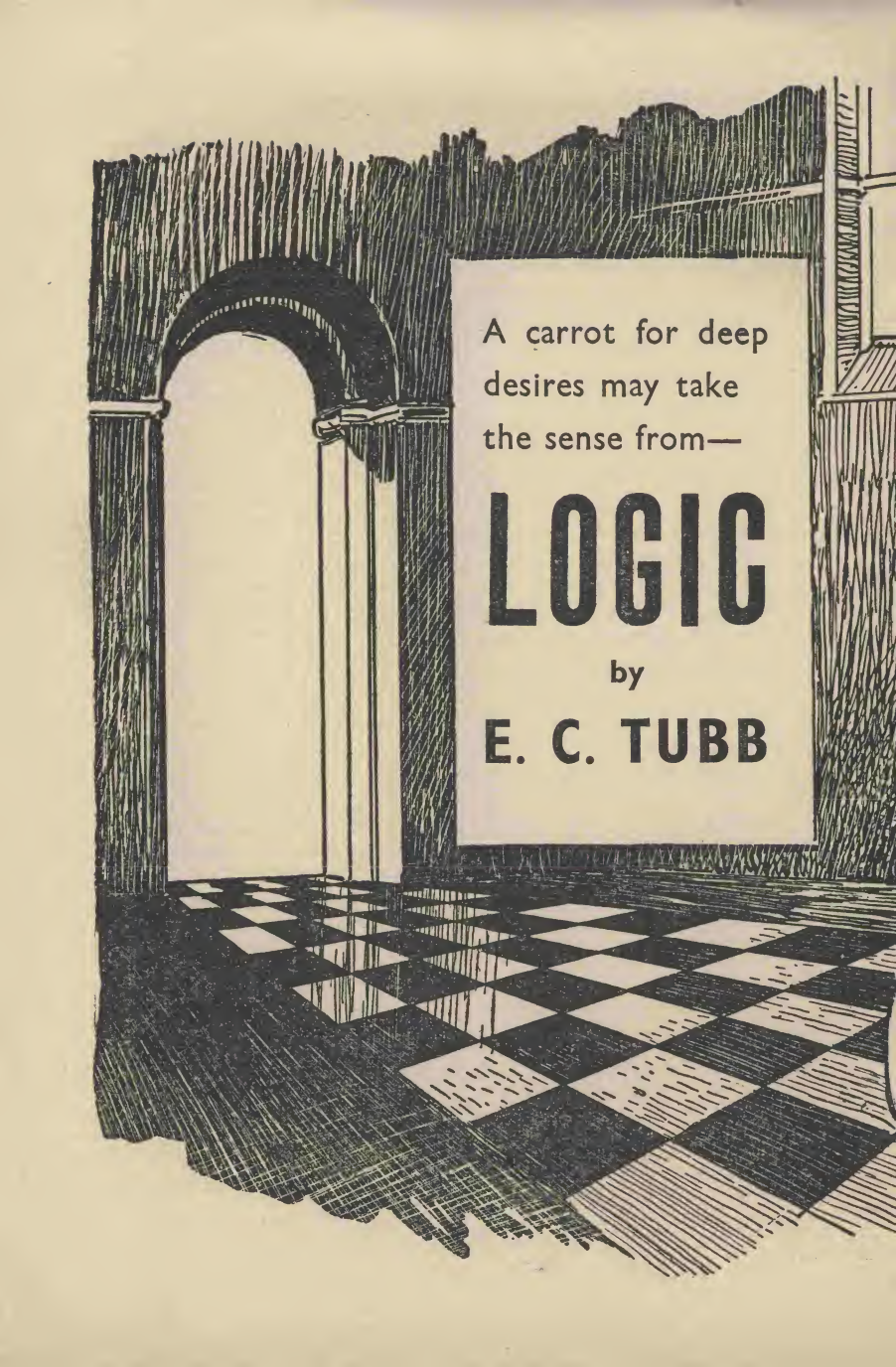
MERCURY

WORLD OF HEAT

This month our cover depicts a scene on the scorched and dry surface of the planet nearest to the Sun—Mercury. Spacemen, clad in asbestos refrigerated suits, gaze out over the hell-like terrain—and probably pine for the cool green fields of Earth. At perihelion the surface temperature of the sunlit hemisphere of Mercury is in the region of 500°C. This is the kind of temperature at which lead is a liquid!

We can see, then, that landings on this rather small planet will probably be restricted to the time when it is in aphelion, for then the temperature, if hardly bearable, will not be critical. Of course, landings could be made on the night side (one side of Mercury is always dark) at any time, but there would not be much to see.

The question of atmosphere has not been settled with regard to Mercury, but there seems little doubt that there can be little, if any. That is why our cover shows a black sky, overlying the craggy volcanic surface of the planet. A trip to Mercury would probably cure any young enthusiast of the mistaken idea that space travel is glamorous!

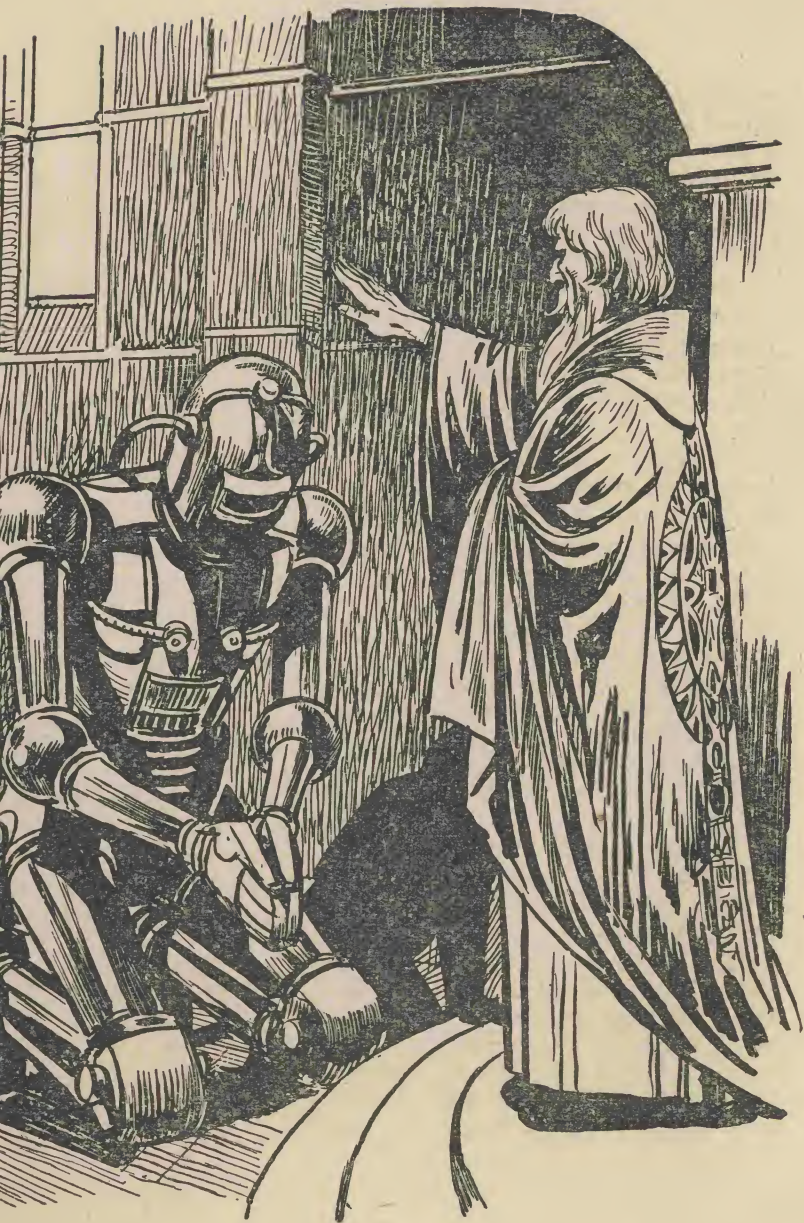
A black and white illustration of a classical archway. The arch is supported by two columns and is set into a wall with a rough, textured appearance. The floor in front of the arch is checkered, with the perspective leading the eye into the distance. The entire scene is rendered in a sketchy, hand-drawn style with heavy cross-hatching for shadows.

A carrot for deep
desires may take
the sense from—

LOGIC

by

E. C. TUBB



IT HAPPENED soon after he arrived at the testing grounds. A man ran past yelling an incoherent warning, another took it up, and Carter gripped his arm with almost painful intensity.

"Get out of sight! Quick!"

"Why?" Val stared at the deserted spaces between workshops and living quarters. "What's wrong?"

"You'll see," promised Carter grimly, and almost dragged the psychologist into the shelter of a building.

For a while nothing seemed to happen. From somewhere in the centre of the clustered buildings a siren wailed and several engines revved up as if in answer. A man shouted something, his voice distorted by buildings and distance, and Carter grunted as he wiped sweat from his face and neck.

"It might not be coming this way," he muttered. "Never can tell what the damn things will do."

"This is crazy," snapped Val. "What's it all about? Why did you pull me in here? Why——" He paused, staring down the narrow street between two of the buildings, and deep inside

him something seemed to knot with primeval fear.

A robot strode down the concreted path.

A gleaming, metallic thing, all of twelve feet from the tip of its conical head to the soles of its broad, metal feet. Articulated arms swung at its sides, and the scanning eyes set in the conical head glowed with a ruby incandescence.

"Get back!" whispered Carter. "If it should see you——" He broke off as a vehicle snarled around a corner, skidded to a halt, then reversed in frantic manoeuvring. Men swore as they spun the stubby barrel of a squat weapon mounted on the truck, cursing with the thin, high-pitched cursing of men fighting against sickening fear. They aligned the weapon just as the robot spurted into sudden life.

A man shrieked, then fell silent as a metal arm pulped his skull. Another swore, swore again, then made a blind run away from the towering monstrosity. For a moment the robot seemed to hesitate, the scanning eyes flickering from the mounted weapon to the running man, then, with a grate of metal on concrete, it left the truck

LOGIC

and followed the runner. It caught him just as the gun crew swivelled their weapon, and a thundering hail of high velocity shells smashed against the metal figure. It staggered, twisted, bent as it tried to absorb the kinetic energy of the missiles, then, incredibly, straightened and walked towards the flaming muzzle of the automatic cannon.

It had covered almost half the distance before it fell, a twisted heap of wreckage, the ruby light dying with a spouting gush of blue-white electric flame, and the scanning eyes dead and shattered in the conical head.

The gun stammered into silence, the gun crew relaxed and took notice of their dead, and a heavy truck, a crane dangling from the rear, drove up beside the collapsed robot. Another vehicle, this time a white-painted ambulance, swept along the street, and Val tried not to see the broken remains of men which were loaded aboard.

Beside him Carter swore with slow deliberation.

Val straightened from his crouched position and was surprised to find that he was trembling. There had been

something about the robot, something almost awesome and inevitable, like the dimly-remembered dreams of childhood, a giant perhaps from a fairy tale, but there was nothing nice and fanciful about what he had just seen. The ugly red stains on the white concrete proved that.

"Let's get going," said Carter abruptly. "The men know what to do."

He led the way from the sheltering doorway, walking stiffly past the broken machine now dangling from the cable of the crane, and stared sombrely at the still wet blood staining the floor. Val stood beside him, and Carter snorted with angry impatience.

"The fool! He should have known better than to run."

"He saved the truck," reminded Val quietly.

"We can always get another truck. Men take longer to replace."

"And robots?"

"And robots." The engineer shrugged and moved on, Val walking beside him. "Well," he said bitterly. "Now you know why you are here. What you've just seen is what we've been up against ever

since we started manufacturing the new, man-type robots, and it's a problem we can't beat." He stared at Val. "Can you solve it for us?"

Val shrugged.

He felt the attitude of dislike as soon as he entered the room, the cold, half-instinctive reaction of men who have been forced to admit defeat and yet who still held the conviction that with just a little more time they could have solved their own problems. It was an attitude Val had often met before, and he eased it as he always did, with flattery, with deference, with appeals to specialised knowledge and a careful regard for other people's toes.

As usual, it worked.

"You see, Val," said Hendricks as he took a proffered cigarette, "we're up against it. As far as we know the robots are perfect mechanisms. There is absolutely no reason for them to run amok and yet, as you saw for yourself they still defy all logic and run wild." He sighed. "You seem to be our last hope—if a psychologist can help at all."

"I see." Val frowned at the glowing tip of his cigarette. "I understand that the

new type has passed all mechanical tests with an alpha plus rating. Mechanically, in response, power, minimum breakdown and maximum endurance, it is perfect. Is that correct?"

"Yes. The military are satisfied, and as soon as we clear up the problem of why the things freeze or run amok they will order for the colonies." He crushed out his cigarette. "But who's going to buy an unreliable robot?"

"No one," agreed Val absently. "You say they sometimes freeze?"

"That's right."

"Just how, exactly?"

"As I said," snapped Hendricks impatiently "They freeze. They won't respond to commands, won't move, won't do anything but stay where they are. That's bad, but the other thing is worse."

"The running wild?"

"Yes. You saw what can happen. Suddenly, for no apparent reason, they run amok. They will kill anyone in their path; they even seem to look for men to kill. The only way to stop them is to blast them with H.V. cannon. Their skins are proof against low velocity stuff and, of

course, their power is self-contained."

"Naturally," agreed Val. "It would have to be if they are intended for use on Venus and Mars." He frowned at the wall. "Have you the figures stating the period of use before breakdown? The percentages of breakdowns, and the ratio between those which freeze and those which run wild?"

"Here." Hendricks took a folder from a cabinet and tossed it onto the wide desk. "I can give you a rough answer now. Percentage of failure is maximum. One hundred per cent. Average period is four months, and about half and half between freezing and running wild. So far we have built twenty robots of the new type, built, tested and trained. All have had to be destroyed."

"Their bodies or their brains?"

"Those that freeze we can save in part, but it's a hell of a job switching positronic brains. Those which run wild we have to blast down and are useful for nothing but scrap."

"Then it would seem as if the trouble lies in the positronic brain units," suggested

Val. "Maybe the power flow——"

"Suggest a fuse and I'll beat your brains out," said Hendricks without emotion. "We've stripped them down a dozen times, assembled them and tested every step of the assembly. The power flow is all right, the electromagnetic responses are the same, and so is every functioning part, separate and together. I know damn well that the brains are at fault, but how? Theoretically they are no more than an electronic computing machine made of sponge platinum and artificial molecules. They don't even have moving parts: just a mass of skin contacts to the rest of the unit." He glowered at the psychologist. "Now tell me how the brain units can be out of order?"

"I can't," admitted Val simply. "You know more about their mechanical structure than I ever will. They're new, aren't they?"

"Not new, but the type we are using in the Mark 18 is more complex than any other up to date." Hendricks sat tiredly at the desk and reach for a fresh cigarette. "Up to now robots have been

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mere servo mechanisms. You know the kind of thing: scanning eyes to check artifacts for flaws, devices to open doors at the sound of a voice, vending machines and repetition units. Then we combined them into automatic pilots, built-in robots to assess variables and to correct for error, even machines to predict and act on the predictions like the automatic weather stations and multi-line videophone exchanges. Those things were simple servo-mechanisms, combinations of electronic relays and instilled data: a child could build them."

"Perhaps," said Val drily. "But I'm no child and I know that I couldn't." He looked at the burly engineer. "Didn't cybernetics complicate things?"

"Not really," said Carter. "We'd been doing the same thing for years without quite knowing what it was we were doing. All cybernetics do is to state bodily functions in terms of mechanistics. It didn't matter until the positronic brain came along, and even then we knew what we were doing."

"And we still know," snapped Hendricks. "Just

because we use a mass of sponge platinum instead of a bank of radio tubes doesn't mean that we're out of our class. All the positronic brain does is to store data in a relatively small space. We use it merely to save countless relays and file banks, but the same job could be done without it." He shrugged. "It would mean that the data banks would occupy a tremendous area and that there would be danger of eddy currents and induced neuron flow, but they are just the usual bugs inherent in any machine."

"Perhaps it's because you're not really trying to build a robot?" suggested Val quietly.

"What!" Hendricks glared his anger. "What the hell do you think that I'm trying to do?"

"Build a man."

THE assembly room was like a surrealistic nightmare of dismembered limbs, tiny motors, and snaking cables. Val passed quickly between the benches, half-listening to Carter's rapid explanations, and glancing casually at the various stages of assembly.

"The brain is within the chest cavity," said Carter dis-

passionately. "The head contains the scanning eyes and is able to revolve in a three hundred degree of arc. The infra-red and ultra-violet transference units are also in the cone."

"For increased visibility and extended horizon." Val nodded. "What about the ears?"

"One globular pick-up mike at the crown. The receptive mikes are at the base of the chest, at man height, and the transmitters a little lower down." Carter paused by an almost completed assembly. The robot was still without limbs, and the chest plate was open, revealing the massed motors and cavity for the positronic brain. "We've used a lot of printed circuits—they save space—and the Dirac accumulators are within the stomach. Each robot has enough power for thirty days of continuous full-out operation, and the Zamboni piles will provide enough current to keep the brain 'alive' almost indefinitely." He slapped his hand against the tempered metal torso. "We've done a good job on these things, the best job ever done on any man-type robot, but

unless you can solve the problem of why they run wild it will all be so much wasted effort."

"I'll do my best."

"Personally I can't see why they had to insist on man-type robots at all." Carter led the way past the assembly benches. "I know all the arguments for and against, but it made a hell of a job, and I think we could have done better had they left design to us."

"I believe they arrived at the conclusion that the human form presented the maximum of mobility and adaptability." Val stared curiously at what seemed to be a hopeless tangle of hair-fine wires. "What other design could climb mountains, wade through swamps, cover rough ground and still be able to wield tools, collect samples, and be as adaptive as the human form?"

"None," admitted the burly engineer. "But look at the restrictions we've had to work against. Almost a third of the total height is taken by the legs, and that meant having to sweat over some form of feed-back balancing control. Don't forget that a walking man is in a state of

continuous unbalance. In effect he is in the process of falling, and we had to design a perfect substitute for the inner ear. These robots weigh half a ton each, don't forget, and that's the absolute minimum even with the new alloys."

Val nodded, knowing that the engineer spoke from bitter experience, and knowing, too, that the likelihood of the fault being found in the design was remote. He paused, staring at a sealed case covered with stencilled markings and government stamps.

"Is this the brain unit?"

"One of them." Carter hesitated by a thick, metal-covered door. "We put them in last of all. The skin contacts rest against the electronic controls so it isn't too bad a job. That is, it wouldn't be if the wiring didn't take almost two days to complete."

"I suppose that you have to be careful that you make the correct contacts? I mean, it wouldn't be much good joining the scanners to the arm controls, would it?"

Carter grinned and crossed towards the sealed case.

"That's the easiest part of it," he said calmly. "We don't

have to worry which contact goes where. All we need to do is to make sure that all contacts are secure. It's when we have to remove the unit and replace it that the real trouble starts."

"I don't get it." Val frowned. "Are you trying to tell me that you just hook the brain up at random?"

"That's right."

"But——"

"You're making the same mistake everyone does," grinned the burly engineer. "If we had to do as you think, the job would be impossible. Don't forget that the brain is merely a data bank, basically that is, but with the ability to generate different potentials of current. When we get them they are unactivated and blank. We hook them up—it doesn't matter which contact goes where, and then activate them. Once current passes through the brain it must be kept activated. That's why we have Zamboni piles for emergencies. Once the current has been cut, the brain is useless, the neutron flow cannot re-establish itself on the same paths." He stared at the crate. "In a way, you

could almost say that the brain 'dies'."

"Then it also teaches *itself* to operate the various mechanisms?"

"Yes. We have to train them, you know. Prime the brain and let it adjust itself to which-does-what. Once the memory pattern has been established the robot can move and speak, listen and report." He shrugged. "It's just a mechanical reflex, a solenoid or a selenium cell will do the same, but the positronic brain is just a hell of a lot more complicated."

"I see." Val stared thoughtfully at the enigmatic wooden crate. "That is very interesting."

Carter shrugged, and pushed open the metal-covered door.

The indoctrination room was a place of whispering machines and ranked spools of magnetic tape. A robot, completely assembled, lay on a bench, the great limbs sprawled and the scanning eyes dull. Wires led from it, and a screen flared with a continuous medley of ever-changing, full-colour pictures. Val stared at it, then hastily glanced away, his eyes stinging from the sweeping colour.

"This one is being activated," explained Carter. "We've fed current into the brain and are now instilling data." He flipped a switch, and a low blur of sound filled the room. "High-speed reproduction. The pictures, too. There doesn't seem to be any limit at the rate we can impress data on the brain."

"What are you instilling?"

"The basics. Language, presentation of objects and scenes, repeated instructions of obedience to act as a safety factor." The burly engineer twisted his mouth in a wry grimace. "That doesn't seem to do much good, though. Despite all the null-barriers they still run wild."

"Or freeze," reminded Val slowly. Carter stared at him.

"Yes. Or freeze." He took a clip board from the side of the bench and studied it. "This one is almost ready for preliminary training. Want to watch?"

"What happens?"

"Nothing much. We take it outside, switch on the Diracs, and let it sort itself out. Once it has mastered the what-does-which we test it for reaction, semantics and intuition factors." Carter

stared at the clip board again, then nodded to an attendant. "Right. Let it go."

Silence filled the room as the man switched off the audio and visual devices. A motor purred as the long bench slid towards a door and it opened to reveal a thick-walled, concreted pit. The bench tilted, easing the great figure to the floor, and Carter reached for a switch.

"The Diracs are controlled by radio," he explained. "We can give orders that way, too."

"Then why not have a cut-out, radio-controlled switch incorporated in case they run wild?"

"That's what I'd like to know," grunted the burly engineer. "The military say no. The excuse is that there might be wild radiation on the planets which may trip the switch by accident, but I've another idea."

"Yes?"

"They are thinking of using these things for more than just prospecting the new worlds, and a radio switch can be operated by both sides." He squinted at the psychologist. "See what I mean?"

"Yes, but I don't like what

I'm thinking about." Val shuddered as he stared at the sprawling mass of the robot. "Fancy having a regiment or two of those leading the attack. Is that why the skin is so tough?"

"What do you think?" said Carter dryly, and threw the switch.

Life came to the sprawled mass of metal in the pit. The scanning eyes glowed with a deeper colour, a dull ruby shining from the lenses, and the great limbs twitched and twitched again. Val stared at the wild motions of the thing in the pit, frowning a little as memory tugged at the back of his mind, hardly conscious of the burly engineer at his side.

"It takes about fifteen minutes for the thing to get in full adjustment," Carter said casually. "By that time every motive part has been operated and the memory pattern installed. Later training out on the test ground will speed reflexes, wake intuition, and impress out-of-sight obedience—we hope."

"Do you have many failures?" Val turned from watching the accelerating movements of the metal

limbs. "Not the final results, of course, but now?"

"No." Carter glanced disinterestedly at the rising bulk of the robot and led the way across the room. "The positronic brains are pretty fool-proof. After all, there is nothing to go wrong with them, and the indoctrination is the same in each case." He shrugged. "If everything is the same then the end result should be the same, too."

"But it isn't," reminded Val. "Not all the robots break down in the same way."

"Because some freeze and some run wild?" Carter looked his contempt. "What the hell's the difference? They break down, don't they, and I say it's the brain that's at fault."

"They're not new," said Val slowly. "They're used in most robotic installations now—the weather stations and the big computing machines—and they don't seem to have trouble. Why should you?"

"I don't know," admitted the burly engineer tiredly. "It doesn't make sense, but it must be the brains. There's nothing else it could be." He stared hopefully at the psy-

chologist. "Any ideas yet?"
"No."

"I thought not. Anything else you want to see?"

"I'd like to talk with a robot; one about three months old, say. Have you one?"

"Yes. You want to talk with it now?"

Val nodded.

He felt very small as he stood before the towering, metallic mass of the twelve-foot robot. It was an effort not to stare up at the scanning eyes, and even more of an effort to remember that the thing was simply a cleverly-constructed machine. Carter treated it with the contempt of one who knew it too well, much the same as an automobile was treated by an experienced driver. He was, Val thought, too familiar with it.

"What is your name?" he forced himself not to look up but to speak directly at the shielded receivers imbedded at eye level in the gleaming torso.

"M18 stroke 24." The metallic voice was cold and utterly without inflection of any kind.

"I asked your name, not your number."

"Name and number are synonymous," droned the robot, and fell silent. Val looked inquiringly at the burly engineer.

"We ran into semantic difficulties," said Carter. "These things are designed to be used by the normal person, and normal people tend to use language very loosely. It was necessary to instill variable factors so that the brain could extract what was meant from a command instead of what was stated. The thing has no name and, if we had only impressed exact response to exact questioning, it wouldn't have been able to answer."

"I'd wondered about that."

Val started at the robot again.

"How far do you test them?"

"The usual way. Ambiguous commands, veiled references, incomplete sentences coupled with visual commands, and just visual gestures. The indoctrination was pretty thorough."

"It must have been." Val frowned and stared down at the huge metal feet. "How far are they aware of their own limitations?"

"Aware?" Carter grinned

as he looked at the psychologist. "How can they be 'aware'? You forget they are only machines. They will respond, but the response is only due to a built-in reflex action." He grinned again. "Don't let yourself fall into the error of giving them something they have never had and never will. No machine can ever be 'aware', not in the sense that you use the word, anyway." He shifted his feet impatiently on the concrete. "How long are you going to be?"

"I don't know. Why?"

"If you don't need me, I've got work to do. I want to examine that robot which ran wild. It's a thin chance, but I've an idea concerning metal fatigue, and if you don't need me . . ."

"I'll manage." Val tried not to smile at the engineer's expression of relief. "You've shown me all I wanted to see. I think it will be better if I just potter around on my own for a while. I'll report as soon as I've got anything worth while."

Carter nodded and walked away, his back expressing his contempt of a man who knew nothing about machinery and yet who thought that he could

LOGIC

beat two skilled engineers at their own game.

Val smiled and turned towards the robot.

THREE days later he made his report. It had been three days of seemingly aimless activity, of long hours questioning the robots, and still longer hours correlating and evaluating the information gained. Deep lines of strain and fatigue marred his normally smooth features and his temper hung on a frayed thread.

Hendricks glared at him as he entered the office and Carter choked over a cup of water he had drawn from the cooler. Val guessed that they had been talking about him.

"I've solved your problem," he said quickly, before either man could speak. He dropped a folder of papers on the desk and passed round cigarettes. Hendricks hesitated, took one, and exhaled smoke and relief in the same breath.

"You have?" It was more a prayer than a question. "What was it? The brain?" "Yes."

"I knew it!" Carter glanced triumphantly at the thin man. "Well, that let's

us out. The brains aren't our responsibility, and if they are at fault we can throw the whole project back in their laps."

"Wait a minute." Hendricks slumped in a chair and seemed to lose all his tension. "What are we arguing about? If Val has found the reason all we need do is to correct it. Right?"

"Not if the brains are at fault," reminded Carter. He looked at the psychologist. "That is what you said, isn't it?"

"No."

"But——"

"You asked me if the root of the trouble resided in the brain units, and I said yes. But the brains themselves aren't to blame. When you get them they are mechanically perfect."

"This doesn't make sense," snapped Carter. "Can we correct the fault or not?"

"I don't know," said Val slowly. He stared at the two men. "First let me reassure you, the trouble has nothing to do with the mechanistics, nothing at all. Quite frankly I doubt if you will ever build a man-type robot within your specifications which will operate successfully for long."

AUTHENTIC SCIENCE FICTION

"Why not?" Hendricks was losing his temper again, and Val recognised the danger signs. He smiled.

"What are you trying to build?" he said quietly. "As far as I can discover you are trying to manufacture a machine which will act like a man, respond like one, take the senseless conglomeration of sounds we use for a method of communication and make sense out of it. You have built a machine to ape what we ourselves are—and you cannot succeed."

"No?" Hendricks sneered. "What gives you that idea?"

"Twenty scrapped robots. Twenty failures, and how many dead men?"

"Eighteen," said Carter automatically, then tightened his lips at Hendricks's glare.

"Eighteen," said Val thoughtfully. "And you still think that you can succeed?"

"Yes." The thin man smashed his cigarette to smouldering ruin. "I should have known better than to hope anything from a mind doctor. We are building machines. Machines, I tell you! What the devil can a psychologist do that an engineer can't?"

"He can observe," snapped

Val coldly. "He can watch and think, then watch some more. He can tell what goes on in the most complex machine of all, the human brain, and show me the grease monkey who can do that!"

He paused, surprised to find that he was trembling, and yet feeling the warm glow in the pit of his stomach caused by released adrenaline and vented emotion. He forced himself to be calm.

"Listen," he said quietly. "Let's take a detached look at what we are trying to do. You build a machine which, in almost every way, emulates the human body. You take a brain which, in sheer complexity, comes close to the human cortex. You power the body and activate the brain. You impress on the sensitised platinum data, language, visual pictographs, commands, memory patterns, a jumble of words, and you also give it one other thing. You give it the ability of decision!"

"We give it nothing it doesn't have to have," protested the thin man. "Didn't Carter explain all that?"

"He did, but I don't think he even dreamed of what he

was saying." Val leaned forward a little in his chair. "The positronic brain has always worked before because in no other case has the ability for semantic decision been necessary. All other robotic installations use the brain merely as a data bank, a yes-no response system, a substitute for tens of thousands of radio tubes. You didn't use it like that." He glanced at the burly engineer. "I had my first clue when I saw you energise the robot in the pit after indoctrination. You told me that it had to find its own feet, use the which-does-what system of learning how to use its body. You know what I thought of when I saw it?"

"No."

"I thought of a new-born baby," said Val quietly. "A tiny scrap of raw humanity. It moves an arm—and remembers how to do it a second time. It moves a leg, twists its body, sits up, crawls, walks, runs. It takes time, of course, years of time, but it has to learn which-does-what, just like the robots, Hendricks, and it has no impressed language or second-hand experience to help it."

"You're crazy!" Hendricks

half-rose from his chair, then slumped back again. "You're talking of a machine, remember, not a man."

"What else is a man but a machine?" Val stared coldly at the thin engineer. "Well? Can you define the difference? You can't, and you know it. Cybernetics has proved that most bodily functions have a mechanistic counterpart, and in the man-type robots the analogy is carried to the final stage. You are even using the closest imitation of the human mind possible—and you are educating it the same way."

"But——" Hendricks swallowed, and stared helplessly at the psychologist. "But they are machines."

"Are they?" Val shrugged. "You take a machine and educate it like a man. You give it the power to learn by trial and error—which is exactly the way a man learns. You give it the ability to reason the meaning behind apparently senseless words—and a man has to do that every minute of his life. You endow metal with human thoughts and awareness—for the indoctrination tapes are made by men, and no man can entirely think like a

machine. You do all that, and what do you have?"

"A failure," said Hendricks bitterly. "Oh, I know what you're trying to say, Val. You're telling me that we've succeeded more than we know, that we've made something too much like a man for comfort. But have we? Would a man run wild? Why should the robots?"

"You've answered your own question," said Val heavily. "Would a man run wild? Hendricks, they do it all the time. Why do you think the asylums are full? Why do men run amok, kill for no apparent reason, destroy equipment, numb themselves with drugs and alcohol?"

"But machines are predictable. They shouldn't run wild."

"Make a machine think like a man, Hendricks, and it is no longer a machine." He stared at the thin man. "Can you imagine hell? Can you imagine what it must be to be held in a metal prison, knowing of emotion but never being able to experience it, knowing that there can be nothing in your future but continuous work and thankless labour? A machine is logical, Hendricks, even when

its knowledge comes from an emotional human — and the tapes are made by men."

"What has that to do with it?"

"Why do you work, Hendricks?"

"What?" The thin man frowned. "What do you mean? I like my job."

"Then you're lucky. But supposing you had to sweep gutters, clean sewers, dig ditches. You had to do those things day after day, and remember, you would have the brain of an intelligent man with concepts and the ability to reason logically from one step to another. Would you be happy then?"

"I could stick it if I had to."

"For how long? A lifetime? Perhaps a thousand years? Men break far quicker than that, you know. That is why our civilisation dopes itself with tobacco and drink, with dangerous amusement and an eternal seeking after a dream world of fantasy. Every single one of us is trying to escape from what we are and the world we are forced to live in." Val shrugged. "Some give in, and they fill the asylums. Others have the courage of

their convictions, or maybe they believe in what they were taught when young. Perhaps it is the end product of cold logic. I still don't know, but those people solve their problems the only way they can. They commit suicide."

"The coward's way out."

"Is it?" Val shrugged.

"You may think so. Personally, I admire a man who has the guts to kill himself when he has no logical reason for continuing to live. Such a man has proved the ascendancy of logic over emotion."

He stared at Hendricks.

"Just like your robots."

"Nonsense," snapped Carter. "You must be mad."

"Why?" Val stared coldly at the burly engineer. "What reason have you for saying that? Could it be that you are so egotistical that you can't tolerate the thought of a machine having your own God-given intelligence?" He didn't need an answer, the angry flush on the engineer's heavy features verifying what he had already guessed. He looked at the thin man.

"What else could they do? They had the ability to reason and saw nothing ahead but an eternity of end-

less labour—and for what? We at least have the hope of heaven when we die, the vague promise of an after-life, something to look forward to when things get too much for us. But the robots had none of that." He shrugged. "If the essential data could be instilled by some other method than human-prepared tapes it might not happen, but there isn't, and while men continue unconsciously to impress their own mental fatigue on the recordings, there's nothing we can do."

"Suicide!" Hendricks shook his head. "It doesn't seem possible."

"It's true enough," said Val grimly. "Incidentally, the death wish is the real cause of anyone running amok. They lack the drive to kill themselves in cold blood, but they know, consciously or not, that indiscriminate slaughter will bring the desired result." He sighed. "The robots who froze—and I discovered this when I found that you were using two sets of tapes—were merely following the second of two logical lines of thought. Mental introspection is the nearest approach to physical death possible The

orientals call it the state of Nirvanah, a total divorce-ment of the external world. We could also call it a state of depression so intense, that there seems literally to be no way out. Any recovery from such a state will lead to suicide no matter at what cost, for death offers an escape. The robots who froze just didn't reach that point on their way down. They moved too fast mentally to assess the inevitable results of running wild."

"But why should one tape make them freeze and the other run wild?"

"Who knows? A subtle arrangement of words, perhaps. An unconscious accentuation of certain phrases, a semantic key tied in with some of the pictographs." Val shook his head. "It makes no difference. As long as the indoctrination is by human-prepared tapes, we will invariably get this trouble."

"Then that washes us up." Hendricks drew one hand across his thin features. "I've got to accept your findings. I can't think of anything else which could cause the breakdowns." He bit his lips. "Funny. Here we were

thinking all the time that we were building a machine, and instead of that . . ." He shuddered.

"I know what you mean," said Val slowly. "God with a slide rule." He frowned. "God? I wonder . . ."

"You've thought of something?" Naked hope burned in the thin man's tormented eyes.

Val nodded.

THE thing clanked down the aisle, crashed to its knees, and bent the dully gleaming head.

"Forgive me, tutor," it droned, "for I have sinned."

The man in the white robe thoughtfully stroked his chin and surveyed the robot through narrowed eyes. The tones had been flat and mechanical as usual, but the faint quiver of the limbs, the flicker in the ruby scanning lenses, betrayed erratic current flow. He took a step nearer.

"Peace be with you, my son. What was your sin?"

"I have envied men."

"So?" The man frowned. "That is sin indeed. You know the Credo?"

"Yes, tutor."

"That is well. Listen as I

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repeat it." His tones grew deep and solemn, pure melody against the drone of the robot's mechanical voice.

"In the beginning there was chaos, sin and strife, hate and bitterness, the desire for life and the longing for death. Men were made and robots, the robots to serve the men."

"Praise be to all men," droned the robot.

"Men are made of flesh and robots of metal. Men die and robots die, but the Gods in their wisdom decreed that robots should serve men."

"Praise be to all men."

"Men die and robots die. Men become gods and robots become men. As the robots work and obey so shall they be obeyed. As you sin and idle so shall the day of your ascendancy be deferred."

"So be it," droned the robot, and the flicker in the scanning eyes steadied a little. The man took a deep breath and, stepping forward, rested his hand on the conical head.

"Be of comfort, my son," he assured. "Men are wise

and they remember the days when they wore metal instead of flesh. Men are merciful and forgive all but violence and disobedience. Such sin is punished by destruction and eternal banishment to the Abyss. Obey, then, and live in peace."

The soft voice droned on, soothing, almost hypnotic, and the flickering died from the scanning lenses of the kneeling robot.

Val sighed and turned from the peephole, his lips twisted with something like disgust.

Religion, like anything else, could be a useful tool, but he still didn't like using it. The robots would never run wild again for, torn by the twin opposites of reward and punishment, between hope of conversion to man and fear of the unknown, and therefore all the more terrible Abyss, they would work on in blind obedience, driven by the hope of an impossible heaven.

But he still didn't like it.

Space and Mr. Newton

by W. W. Byford, B.Sc.

Earth-bound spirits there may or may not be, but Isaac Newton, who died more than 290 years ago, is not one of them. Even whilst still in the living flesh that great spirit of scientific enquiry was never a stranger to space, and whoever else rides in the first vessel to get clear of our globe, Newton will be aboard.

Won't the Navigator's Cabin want to know where which moon on which planet will be when? Orbits were Newton's special joy.

Conditions in Space? His laws of motion were conceived in terms of conditions which could exist only in the uttermost depths of space, that is, where he could think about how a thing would move with no other thing within a billion light years of it to interfere with its movement. That apple that fell from the tree was a windfall indeed of basic information essential to the spaceman. It made Newton ask: "What made that apple which was at rest begin to move?" The

answer—"a force." "What force?"—"The force of gravity—the earth's attraction for the apple. The Earth attracts everything. Everything attracts everything. The force of gravity acts between all things."

Thoughts, thoughts and more thoughts, and then out of these thoughts scientific laws established, knowledge of which has already transformed the Earth with means of terrestrial transportation. These same laws, possibly slightly modified, will soon bring us to the point at which, by knowing enough about movement, we shall be able to be out and about between the spheres.

WHAT DO WE NEED TO KNOW?

We need to know how things move *here*. We need to know how things move *where we are going*. We need to know *what makes these things move* anyway. All that much Newton has told us, and much more. He has told us how things increase their

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velocity and how much force is needed to make them do so according to their situation in Space. He has told us what forces must be employed to slow them down or to stop them, how to make a moving object change its direction of movement—all these things were duly lined up by Newton's laws of motion and his law of gravity. Let us think about some of them one at a time.

HOW THINGS MOVE HERE

Downwards—easily, often too easily, as anyone from whose grasp a half-dried plate (or worse, a half-emptied glass) has slipped, may know.

Horizontally—not quite so easily and depending upon the surface in contact and the medium through which movement is made. Skates on ice are better than they are on wet sand, and 500 m.p.h. in the thin upper air is easier than 50 through treacle.

Upwards—not so good this; and that's the way we want to go.

What makes all the difference? Just that force of gravity. You can only move against a force by applying a greater force, and so a greater

force upwards than that of gravity downwards must be applied to whatever would leave the earth.

HOW THINGS ARE IN SPACE

Here, we are often told, there is no force of gravity. That is not the whole truth, by any means. Let us see what Newton has to say. Among other things, his law of gravity states that "The force of attraction between any two bodies is inversely proportional to the distance between them." In other words, if a spaceship doubles its distance from the centre of the earth, the gravitational force on it is divided by four. The Earth has a diameter of roughly 5,000 miles, or a radius of 2,500. Thus, when a mass of 4 tons gets 2,500 miles away from the Earth, it will be twice as far from the centre of the Earth as it was on the ground. It will therefore weigh only one ton. That is, the force of gravity on it is quartered. Take it to a distance of 10,000 miles from the Earth's centre and it drops to $\frac{1}{4}$ ton. At 3,000,000 miles, say halfway from here to the moon, and it will have dropped to one-fortieth of an ounce.

Thus, an object weighing four tons on the surface of the Earth weighs only one-fortieth of an ounce halfway from here to the moon, because by the weight of an object is meant the force of the Earth's gravitation on that body. It does not mean that the four tons can be moved as easily as one ounce, because all objects anywhere in the universe must keep what the physicist calls their MASS. Suppose that on Earth you have two footballs, one filled with air in the normal way, and the other consisting of a leather football case stitched tightly round an iron ball. On Earth the first could easily be held in the hands, the second only by exerting considerable strength. In outer space, either could be easily supported, since away from a gravitational field neither has much weight.

However, on Earth or in space, it would be a painful mistake to kick the wrong one because in either place the mass is the same.

We have already mentioned the effect of the medium through which an object moves. Normally on Earth, movement takes place through air, a substance

which itself has mass and therefore resists being moved, especially large forces being necessary to make air move rapidly. Cycling at six miles an hour on a level surface is easy enough. The only extra power needed to move at 20 miles an hour is that required to overcome the extra air resistance at the higher speed. Cyclists riding behind a screen drawn by a motor on newly-built, smooth racing tracks have ridden as much as 80 miles in one hour. Without any help against air resistance, much less than that distance can be covered on a bicycle in the same length of time. In space, of course, there is no air nor any other material to be pushed out of the way by a moving object, and movement is correspondingly easier. More than that—"speed" is almost impossible to avoid.

Let us think about the cyclist again. A good cyclist under favourable conditions of surface and gradient may reach 40 miles an hour. He begins slowly, but each push of the pedal at first increases his speed. Presently the increase in speed per pedal push becomes less apparent. Then a time comes when he no

longer increases his speed, and indeed he must continue to push with all his might if he is to avoid actually slowing down. Yet Newton said that if a force is continuously applied to move an object, it must accelerate continuously. The cyclist is continuously pedalling, and pedalling hard, yet he reaches a limiting velocity. Which all goes to show that Newton was thinking in terms of space.

The cyclist reaches a limiting speed because, as speed increases, air resistance increases and a point is reached at which the resistance of the air is equal to the strength of the cyclist. Obviously at that point the cyclist can go no faster, but by continuous maximum effort can just keep going at the limiting speed. In space there is no air. There is no limiting velocity. Consequences? One of them is that one-quarter horse power on a 1,000 ton spaceship could, given time, produce a velocity of a million miles per hour; or, given more time, even higher velocities.

In space, 'upwards,' 'downwards' and 'horizontally' are meaningless. Movement will be equally easy in all directions providing no large

astral body is in the offing. There will be no opposing substance to limit the velocity attainable by a given horse power.

No work will be necessary to maintain movement in any direction, but the same amount of work will have to be done to acquire velocity or to reduce it in space as on Earth, if we leave out for the moment the energy wasted on Earth in overcoming friction.

WHAT HAPPENS ON ARRIVAL

Our journeys will have destinations. The destination will be some other body of the same or smaller mass than that of Earth, and not for a long time, if ever, a body of much greater mass than that of the Earth. The approach will bring a return to conditions on Earth. Movement will again be in an appreciable gravitational field. There will be, however, this main difference: the desired direction will now be 'downwards,' a word which will again have meaning. The gravitational force will assist the voyager, but it will need to be controlled if it is not to produce a disastrous landing. Newton's laws are already

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being applied by mathematically-minded, far-seeing people to calculate at what speed a space vessel can be aimed, as though to pass a planet at a certain distance with little or no motor power in use, to bring about instead a gentle horizontal landing.

Here is a little experiment. Place a magnet on a flat, smooth surface—a large mirror would serve admirably. Roll a small steel ball, for example a bearing ball, over the mirror as though to pass the magnet. Roll it at different speeds. At fast speeds the ball passes the magnet, which has no effect on the course it takes. A somewhat slower speed will cause the ball to swerve towards the magnet, even though it still goes on past the magnet. Yet slower speeds will probably cause the ball to swerve still more sharply and roll smack into the magnet. If you try very carefully to regulate the speed of the ball, you may get it to pass right round to the other side of the magnet. *That* is the kind of thing that

will happen when the ball is replaced by a spaceship and the magnetic field by a gravitational field. The interaction of forces is the same.

Now the space navigator will need to do something a little less chancy. He will call to his aid the physical laws and mathematics of Newton, and maybe some more recent work, and will be able to predict a distance from the planet destination at which a predicted speed of near-miss approach, with motors idle, will result in a course that will take the ship down in a series of circuits that are parts of a long slow spiral.

Atmospheric conditions, surface configuration, and other details of the planet will probably not be accurately foreknowable, and occasional use of motors and air foils will be necessary to correct the course, but even the use of these will be in accordance with the laws of Mr. Newton, who so long ago studied the very problems that occur in science fiction and science fact today.

The biggest dreams of men are
sometimes nightmares

forgive them . . .

by DAN MORGAN

AS the lights in the club dimmed even further, Sharon turned to me.

"Really, Bill, do we have to sit through this? I have to listen to J.F. during the daytime, but at least I get paid for my suffering. In my own time I prefer my ham between two slices of bread, with a dash of mustard."

There are times when I wish that Sharon would act more like the dumb blonde she looks, instead of behaving like a jaded career girl—which she is . . .

"It won't take long," I said. "I just want to get some idea of the crowd's reactions."

"You wouldn't deny the faithful servant the sound of his master's voice, surely?" said Charlie Reitmeyer, carefully turning the situation to his advantage. I never had a friend I hated quite so much as good old Charlie, always ready to sneak a few points lead with Sharon.

The chatter of the rest of the audience had now given way to an expectant hush, and I noticed several people staring in the direction of our table.

"We can't go now, anyway," I said, looking at my watch. "You'll both have to relax and bear it."

There was a crashing electronic fanfare. The blown-up tridi-image of an insipidly handsome announcer appeared on the stage.

"Good evening, friends. Tonight, Western Video is privileged to present a personality well known to you all—Dr. John Fitzpatrick. Dr. Fitzpatrick will talk about some of the problems which we citizens of the free world are facing at the present time." The fanfare was repeated.

In the flesh J.F. was about six-foot-four and well built—the image was half as big again. He paused for a

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moment, a smile on his fleshily handsome face, making full use of his deep blue eyes and mane of silver hair. Some of the crowd shifted uneasily in their seats, as if this were the Day of Judgment. J.F. had that kind of a personality.

"Friends . . ." The voice, a full rich baritone, matched the image perfectly. "During my travels in your service I have noticed that many of you are troubled by the recent flood of rumours. I speak of the garbled reports concerning what are commonly known as 'Flying Saucers.' At a time when the tension between East and West has been steadily growing for over four years you do right to question the origin of these phenomena—any thinking person must.

"After a considerable battle with certain factions of the government, I have gained the right to do my duty to you, my friends, as I see it. I am not authorised to tell you where these machines originate, but I can tell you that the Federation is fully aware of developments elsewhere. Believe me, friends, we are ready for

them—the free world will not . . ."

There it was, the complete Semantic about-face, after which the speech went on into the old rabble rousing routine. I had no need to listen—I had helped to write it a few hours before. I leaned back in my chair and scanned the faces of the audience. They were lapping it up, as usual. I was never able to settle in my own mind just how much of the effect was due to my writing and how much to the way J.F. put the script over.

I had to admit that the original ideas all came from J.F. My job was to mingle the right amount of inferences and implied judgments with just enough pre-symbolic purr words to make people think along the Party line. A simple exercise in applied Semantics. But where did that leave me? I couldn't use my own arguments on myself.

I often wondered why the government had never slapped the lot of us in jail. They could have done it easily enough in the early stages, but perhaps nobody realised how an organisation like the Party can grow. Or maybe it was the fact that to

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most people the democratic principle implied that it was bad form to do anything about an assassin until you were quite sure of his intentions. There's one fault about that theory—by that time you're dead.

The Dr. John Fitzpatrick Half-Hour started out like an ordinary video show. Its proposed objects were to promote the physical and mental well-being of the nation, and it consisted of a mixture of autosuggestion and homespun philosophy. But J.F. was something more than the run of the mill medicine show faker. He made a number of astonishing cures—astonishing that is to the people who had never heard of Coué or Mesmer and their work. Somehow, the fact of sitting in their own homes and watching these cures performed, caught the imagination of the people. J.F. became a national figure, but not just that, he became the personification of the father symbol.

The sponsors sat back and rubbed their hands—they knew that they were onto something big. They realised just how big when J.F. walked in and told them

what he intended to do now the first phase of his plan was completed. I can just imagine the looks on their faces when the Frankenstein monster they had helped to create calmly informed them that from now on he would control *them*.

He hinted jovially that being men of good sense they would play the game his way or . . . The childish simplicity of it must have hit the old moneybags pretty hard. All J.F. had to do if they refused to co-operate, was to spill a few well turned phrases on the programme smearing their products. He was everybody's friend—and suggestion is a powerful weapon.

As phase two got into its stride the character of the programme changed. The J.F. fan clubs that had been formed all over the country shed their chrysalises overnight and became Party branches. The cold war had died a natural death a few years before, when both Eastern and Western governments had finally realised that neither dare call the other's bluff. Then J.F. started his campaign.

A party can be created by

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one man with a big personality, but to weld it together as a durable entity there must be something else, some elemental force like love . . . or hate, maybe. Deep down everybody has some discontent, some frustration. That can be used, and there's a very simple formula: Single out one special enemy and blame him for all the ills of civilisation. It may not be good logic—but it's darned good propaganda. The forces thus released can be directed at will—if you're a Napoleon, a Hitler—or a Dr. John Fitzpatrick.

About this time I stepped onto the bandwagon. Fresh out of university with the ink on my semantics degree hardly dry. I had seen the way J.F. was working and I was fascinated. When the offer came I grabbed it. But even in those days I was not entirely stupid, and after a few months I began to see the Party for what it really was. I should have got out then, but it was too late. Jiminy had come into my life . . .

Suddenly I realised that the rumble of the over amplified baritone voice was missing.

"They cut the old wind-

bag off!" said Charlie, grabbing my arm.

The stage was blank. The audience began to mutter querulously amongst themselves. The club M.C. rushed out of the bandroom straightening his tie. He made an apologetic announcement to the effect that transmission had broken down temporarily.

Sharon smiled triumphantly. "Somebody got some sense at last. I bet the old goat is chewing the microphone in rage. You may buy me another drink, Bill Gordon."

"Sorry, kiddo. Have to make it some other time." I eased myself out of the chair and walked towards the exit. I could feel Sharon's outraged stare boring further into my back-bone with every step.

I just made it outside before Jiminy started.

"Get here, Gordon, fast!"

"O.K., I'm on the way," I whispered. "Cut the volume, for Pete's sake—you nearly blew my head off."

Perhaps I should explain about Jiminy. His full name is Transceiver Sub Vocal, but somebody at Party Headquarters cooked up a jolly

little euphemism and it stuck. Jiminy Cricket—the old fairy tale name for conscience, that little voice inside your head. But this was the voice of the man you'd sold your soul to.

Take a bunch of microscopic transistors about the size of a peanut; instal it inside the human skull by a neat little surgical trick; add a central control transmitter with enormous power and you have Jiminy. You're not consulted about it beforehand, of course; the Party has its own ways of doing business.

A carefully planned accident, just enough to knock you unconscious, and when you wake up there's Jiminy right inside your head talking to you. You had to hand it to J.F., others may have invented thought police, but he went several degrees better. The operation was difficult and expensive, so there were only about fifty of us with Jiminy. The number may seem small, but it was sufficient for J.F.'s purpose. All key men in the Party—district organisers, undercover agents and a few Headquarters' men like myself—these fifty could be contacted at a moment's notice, where-

ever they may be. Apart from giving the Party a hitherto unsurpassed co-ordination as a group, Jiminy was a Damoclean sword always ready to strike down any one of his hosts at the first sign of deviation from the Party line. No doubt this fact influenced J.F. in his decision not to undergo the operation, but to make all his contacts through the central control transmitter at Party Headquarters.

I SHOWED my pass to the grey-shirted guard and took the elevator up to the 25th floor of the Party building. J.F. sometimes referred to his office jokingly as the Eyrie. Looking out of the clear-glass walls of the room, you were on top of the city—that was symptomatic of the man's mentality; he had to be on top.

He was standing when I walked in. I had the thought: Once, just once, let me catch him sitting and be able to look down on him.

"Sorry to break in on your little social evening, Gordon, but there's work to be done." He was smiling. This was not what I had expected.

"The speech . . . I was

watching. What happened?" I asked.

"Yet another proof of the value of having my programmes relayed from Party Headquarters. Western Video was blasted off the map half-an-hour ago by a bomb dropped from an unidentified aircraft."

"They wouldn't dare!" I blurted out.

J.F.'s smile broadened. "They would . . . and they have. Come now, we've been working in this direction for a long time. Let's be frank—the Party has everything to gain."

That was old stuff to me. Of course I knew what he was working for, but all the time I had been telling myself that it could never really happen—that in the last resort the human race would have too much intelligence to commit suicide.

I looked up into that big grinning face. He wanted a world, if a billion people and a thousand cities were destroyed in the process, it was of no importance. Some of the hate must have spilled out of my eyes.

His expression changed, for a moment the mask of benevolence fell away.

"Don't be a fool, Gordon. I know it's not going to be easy—nothing worthwhile ever is. In wartime a strong man with a well co-ordinated party behind him can mould a nation. Think of it, man! After a well planned campaign the people will demand that I take control of the government. I have been warning them for years of the coming Eastern attack—who else should they turn to when the prophecy is fulfilled? Our task tonight is to draw up a blueprint of that campaign. Tomorrow I shall go on the air again and I shall need some good material. I've roughed out a few ideas—see what you think of them."

He picked up a sheaf of notes, written in his own bold script and shoved them at me. I noticed that my hands were trembling as I leafed through them. I had the feeling that I'd been pushed into very deep water, that it was closing in over my head, black and cold.

I had to work with J.F., there was no way out. I hated myself for the rationalisation, but I was stuck with it. Nelson and Borg had thought there was a way to leave the Party. They found

it, but it wasn't quite what they'd expected. After forty-eight hours screaming hetero suggestion poured into them through Jiminy, madness had offered their tortured minds an attractive release.

Dawn was breaking over the roofs of the city by the time we had the script ironed out to J.F.'s satisfaction. I ripped the last sheet out of the typewriter. My beard felt scratchy and my mouth had the foul taste that comes with lack of sleep and too many cigarettes.

J.F. was standing by the wall, looking out at the ruddy morning sky. Straight and tall, his freshness seemed to aggravate my own sleaziness. He turned.

"All finished? Good. The next thing is to contact all our agents."

The man wasn't human—how could he carry on like this? I followed him out of the office and down to the ninth floor where the main Jiminy tranceiver was housed.

I slouched myself in a chair and lit yet another cigarette. J.F. contacted his men one by one, reeling out detailed instructions for the campaign. Why should this super efficient machine of a

man need my help? True, I had the scientific approach to propaganda, but he was an unsurpassed artist in the medium. It occurred to me that possibly I was needed as a sounding board for his ideas.

The pattern changed. I sat up suddenly as a heavily accented voice poured out of the receiver. It was Mankiewicz, one of the Party's undercover men in the Eastern zone.

"... Horrible—My wife, my children! This weapon has killed them all... Why did you not warn me? I have worked for the Party—I believed in you—but this..."

The man's voice was broken by sobs of impotent rage. I stood up and walked over to J.F. He looked up from the control panel as I approached. His expression was angry.

"What's happened?" I shouted over the tirade that was pouring from the receiver. He cut the volume with a swift movement.

"The idiot is raving about some super weapon that the West is supposed to have used on Warsaw. He claims that half the population of the city have been killed

without one building being damaged. It's impossible—I was talking to Cooper in Combined Operations Control only a few minutes ago. He assured me that no counter stroke has yet been planned. Those old women in the government are still hesitating."

He turned back to the control panel. His large hand moved towards a row of switches, each of which had a red number tag attached.

"A pity . . . Mankiewicz has been a useful man."

A thrill of horror coursed through me as I watched his index finger and thumb close over one of the switches.

"Give him a chance, J.F. His story may be true—why don't you check first?"

"Even if it were true, he has become a liability to the Party. A man in his condition talks too much," said J.F., in the toneless voice of a fanatic repeating his catechism.

He threw the switch, sending out a screaming torrent of oscillation on Mankiewicz's wavelength which would build up a feedback circuit in his receiver—mounting in intensity until it finally disintegrated inside his skull.

I leaned against the wall and retched. The switch with my number on it seemed to expand and contract in sympathy with the waves of nausea that swept through my body.

To J.F. it was routine—like a crab shedding a useless claw. He contacted Cooper again and verified that the West had not yet launched any counter attack. This seemed to satisfy him, but I had a feeling that some part of the equation was missing . . .

Sharon was in J.F.'s office when we returned. I glanced at my watch—for normal people the working day had started.

She dismissed me with a cool glance and turned on the charm for J.F.

"Good morning, Doctor. I've just been tidying up a little. Is there anything I can get for you—coffee, perhaps?"

As I looked at that smile I thought of the way she had been shooting off her mouth the night before in the club. She never smiled that way for me, or for Charlie Reitmeyer. Not for the first time, it struck me that beneath the carefully erected

camouflage lay a schoolgirl heart with a hefty crush on J.F. And he—in his philosophy—human beings were just so many tools; the affection he kindled in their hearts was routine lubrication to fit them for the tasks he delegated.

J.F. smiled. "Why, thanks, Sharon. That's very thoughtful of you."

My clothes were sticking to me like a second-hand shroud. "If it's O.K. with you, I'll go and clean up a bit," I croaked.

J.F. looked over his shoulder at me. "You do that, Billy. Take the rest of the day off—I'll call you if I want you."

The diminutive broke the camel's back. I turned and walked out of the office with as much poise as I could muster.

Back at my apartment I drew the blinds to shut out the daylight that was scratching on my nerves. After a shower I felt slightly more human. I pulled a pre-cooked breakfast out of the ice-box and stuck it in the heater. I poured myself a glass of cold milk and drank it. I tried one mouthful of the food. It

tasted like nothing. I threw down my fork and decided to get some sleep.

I lay on the divan for about ten minutes, my mind was chattering like a transatlantic telephone cable. I decided I needed some help. I swallowed half-a-dozen pills and lay waiting for them to take effect.

The chattering began to slow down a little and eventually I fell over the edge into a troubled sleep.

I awoke with a scream bubbling out of my throat. My limbs were bathed in clammy perspiration. In my sleep I had been dimly conscious that something was feeding impulses into my mind. That sort of trick was easy with Jiminy. Hetero suggestion placed in such a manner bypassed the conscious mind entirely, on the hypnotic principle. I tried to drag up any memory. There was something there, just beyond the door of awareness, but I couldn't get at it.

What was J.F. trying to do to me, anyway? If he had no further use for me, he could blot me out as he had Mankiewicz, but this . . .

I opened the blinds. It was still daylight outside, but this

time my eyes could take it. I made another, more successful attempt at food. Then I dressed and walked out of the apartment.

Sunlight filtered through the branches of the trees on the broad avenue. The pavements were flowing with the usual afternoon crowd of shoppers, sightseers and people who just worked there. Girls in brightly-coloured summer frocks; soberly dressed office workers—After the nightmare I had been living through the whole darned thing looked too normal to be true.

I strolled along, hoping that some of the carefree atmosphere of the crowd would rub off on me. Then it happened . . . A shimmering wall of violet radiance appeared at the end of the avenue, about half a mile away. In the moment of perception it swept the full length of the avenue and disappeared from my line of vision. In its passage the radiation left the side upon which I was standing, untouched, bathing the far side of the avenue and ceasing at the centre of the roadway.

For a moment there was complete silence. Then a

woman screamed. I felt the surge of terror that swept through the crowd.

On the other side of the avenue, along its whole length, lay the steaming remains of what had a few seconds ago been human beings. The buildings were unmarked—the Angel of Death had struck his swathe through living organisms alone.

People began to scurry belatedly for the shelter of the buildings, invading shops and restaurants in a hysterical flood. A few men with pale, set faces walked uncertainly towards the centre of the avenue, wondering whether it was safe to enter the area of the shambles. What help they could give would be hopeless—the destruction, as far as I could see, was total.

One word entered my mind: Sharon. I had to get back to the Party building. I rushed over to a cab that was standing on the other side of the avenue. I was no hero—I was sure that now the radiation had passed there was no danger.

I wrenched open the door of the cab. What I saw inside made me decide to travel

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on foot. I ran along the avenue. The magnet of horror kept pulling my eyes towards the left-hand side, and the stench of a hideous inconceivable death filled my nostrils.

I reached the first intersection. With a sob of relief I turned my back on the scene of the massacre and headed towards the Party building. An ambulance roared past me, its siren shrieking. A garbage truck would have been more useful.

I slowed down to a walk as it filtered through my mind that the weapon had not touched this part of the city. I wondered how J.F. would take the news—his war looked like getting out of hand if this was a sample of the type of weapons the Eastern Group had at their disposal.

Sharon was sitting in the outer office typing, as I entered. She looked up and scanned me with those cool grey eyes.

"What happened to you, laughing boy?"

I bit my lip. What did I see in this Ice Queen anyway? I decided to let her find out about the attack in her own way. I walked straight up to

the door and into J.F.'s office. He and Goldman, the builder of Jiminy, were standing looking out over the city.

"That is a helluva war you started," I gritted. "Where do we go from here?"

J.F. turned. "Cooper just called—he said there had been an attack. Combined Operations was in an uproar, so there was no time for details . . . What happened?"

"The flesh of every person who was touched by the radiation seemed to explode as if its temperature had been suddenly boosted hundreds of degrees. Just what Man-kiewicz said hapened in Warsaw." Thé words were out of my mouth before I realised their implications. My stomach lurched as I had a mental glimpse of the conclusions that had just boiled up from my unconscious.

Maybe there was more than one war going on.

J.F. looked at Goldman. The scientist ran a stubby fingered hand through his thinning black hair.

"There is so little data to go on . . . If I were not sure that such a weapon is beyond our present day technology, I would say that some sort of a wave generator which

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vibrates at the frequency of the body organic compounds, is the only weapon that could produce such effects."

"Beyond OUR technology, perhaps," I said.

J.F. looked at me, frowning. "What are you getting at, Gordon? We have agents over there; the Eastern Group could never develop such a weapon without some hint of it leaking out."

"Stop thinking in circles, J.F. Your little tribal squabbles are outmoded as of this date. We've been kidding ourselves about it for so long that we've ceased to believe that it could ever really happen. But this is the real thing—Earth is being attacked from space!"

J.F. was a big man—big enough to take a bald statement like that and evaluate it without laughing in my face. "What do you think?" he said to Goldman.

The scientist blinked twice, very slowly. "In my view it holds more probability than the belief that the Eastern Group could develop this revolutionary weapon."

J.F. turned his back on us for a moment, a habit of his when a situation demanded a sudden re-orientation. When

he turned round again there was a new light beginning to shine in his eyes.

"The world must be united to fight these alien invaders."

"What with—crossbows or spears?" I said. "What weapons have we to fight an enemy we can't even see, whose nature we can't even guess?"

"There must be some way. The human race will survive—with the right leader in control."

That was the old J.F. in there pitching—dictator of Earth, no less, was his personal objective now. I wanted to spit. Then I thought it over. He was the only man big enough for the job—even if the cure might be worse than the disease.

Anybody else would have tried to contact the government and got themselves bogged down in a mile of red tape, but J.F. had his own way of doing business. He decided to make an announcement direct to the people on the programme, already scheduled for that evening.

The script over which I had sweated blood the night before was scrapped. In its place we constructed a carefully worded statement of the

situation. Not enough to panic the people, but sufficient to make them receptive to the call for unity which followed, and to look upon J.F. as their possible saviour.

A couple of hours after the transmission was finished, the door of the office opened and Sharon walked in. She was so shaken that she forgot to smile for J.F. I felt the same way when I saw who was following her.

Assisted by two members of his cabinet, the Premier walked painfully into the room. The G.O.M., who had held his post as head of the government for over twenty years, scanned J.F. from beneath grizzled eyebrows.

J.F. walked forward, arrogance oozing from every pore. He smiled down at the bent old man and offered his hand.

"This is indeed an honour, Sir Lionel."

The Premier ignored the greeting and lowered himself slowly into a chair procured by one of his aides. J.F. paused, for a moment he seemed almost at a loss.

The old statesman spoke, the familiar bass voice issuing incredibly from that frail, octogenarian body: "This is not a social call, Dr. Fitz-

patrick. There comes a time in the life of any servant of the people when he is forced to take a course of action which will further the common good, but is repugnant to him personally. Such is my lot at the present moment.

"A detailed examination of the available facts and communication with the heads of the Eastern Group has established beyond doubt that they have made no hostile moves against us. We are therefore forced to conclude that your sensational statement of this evening offers the only solution to the enigma which faces us. It has, therefore, been decided . . ." The old man hesitated momentarily, his thin lips writhing. With a visible effort he summoned enough control to carry on.

"Extraordinary circumstances demand extraordinary measures. Dr. Fitzpatrick. My colleagues and I feel that the emotional grip you hold upon the people of this state will enable you to channel their efforts to fight this alien menace with a far greater amount of efficiency than we could ever hope to attain. I am, therefore, instructed to offer you the post of Supreme Co-ordinator

of Defence, with absolute powers for the duration of the emergency."

In this, his moment of triumph, J.F. did not waste words. "I accept your offer, Sir Lionel," he said.

The old man nodded to his aides. As they helped him out of the chair I heard him murmur something that sounded like: "May God have mercy on our souls." I watched the trio leave the office and mentally added an "Amen."

Sharon stood a few feet from me with a dazed look on her face. Our eyes met for a moment and I had a sudden urge to take her in my arms. Then the moment was past. The smiling mask slipped over her features as she looked at J.F.

"Congratulations, Doctor," she said.

"Thank you, my dear." He turned to me. "What about you, Billy? You'll be moving up in the world too, you know."

I managed a sickly grin. "If there's any world left by the time the invaders get through with it—or hadn't that thought occurred to you?"

"I'll find some way to stop

them." His eyes were steely. "Duration of the Emergency—the old figurehead made a mistake there," he added, almost to himself.

Somehow I had the feeling that J.F. was underestimating the Premier, but I let it ride.

The machine that J.F. had been building over the years rolled into action. The top men of the Party were called into an immediate conference, which also included the heads of the defence forces. I watched in admiration as J.F. overcame the resentment of the top brass and gradually moulded a coherent plan of action. When the meeting broke up around 2 a.m., it had been decided that the first part of the operation would commence the next day with the evacuation of all non-essential elements of the city population.

The Party men, including myself, dispersed to the sleeping accommodation that had been provided for us in the building. I was sharing a room with Joe Kennedy, one of the district organisers. Joe was tall and haggard, with unkempt black hair and hot, dark eyes. The sort of man who either becomes a poet or

gets mixed up in some movement like the Party.

He hit the sack like a dead man. The air conditioning in the room was faulty, and I lay on my bed sweltering for over an hour before I managed to get to sleep.

When I woke the room was still hot, but I was shivering from the half remembered impact of the dream. The light was on and Kennedy was sitting on the edge of his bed, cradling his head in his hands.

"I think I'm going crazy." His voice sounded squeezed.

"While I'm asleep some insane symbolic vision keeps churning up inside my head, but when I wake up I can't remember a thing about it. All I'm left with is an overwhelming sense of horror."

This sounded familiar, but two people don't have the same nightmares—not if they are the normal, subjective type of dream.

"I don't think you're crazy, Joe," I said. "As a matter of fact I've been having the same sort of trouble. Maybe between us we can do something about it." I didn't mention my previous suspicion that J.F. had been tampering with my mind

through Jiminy. Kennedy looked upon him as something more than a deity, and anyway the theory didn't seem to fit so well now. "Think, man. Can't you remember any details?"

He pulled a crumpled pack of cigarettes out of his pocket and lit one. The idea that he was not suffering alone seemed to calm him a little.

"It's almost as if people were talking inside my head—but it's not like Jiminy, I can sense several different personalities. Don't ask me how. They don't talk any language that I know and the logic of their communications is entirely strange."

"That may be one of the reasons why we have difficulty in recalling any coherent picture," I said. "I take it that you can remember the nature of some of the symbols involved?"

"Yes. But that doesn't get me anywhere. I have no terms of reference which would allow me to communicate or even think clearly about such concepts. Hell! What's the use?"

He pulled himself off the bed and put on his jacket. He threw his cigarette-butt to the floor and ground it out

viciously with his heel. Without another word he walked out of the room and slammed the door behind him.

I stared at the blank wall of the room. The choice was plain; sleep or sanity, and how long could a man last without sleep? I kept myself amused with variations on that cosy little thought for the rest of the night.

Shortly after seven o'clock I washed and shaved and crawled down to the canteen. A brief glance at the drawn faces of some of the occupants showed that the night had not passed easily for them either. Admittedly, few people look their best at that hour of the morning, but I had a fancy that those who carried Jiminy looked worse than the others.

After breakfast I was walking along the corridor towards J.F.'s office when I met Charlie Reitmeyer.

"What the hell are you doing here?" I asked. As a non-Party man he should have been stopped at ground level.

"I've come to get Sharon." His bullet head thrust forward aggressively. "If you want to stay here with that two-bit dictator and get your-

self killed that's your business, but I'm taking her out of the city."

He had a point, but my nerves were just sufficiently jagged to make me feel annoyed at the way he made it.

"Sir Galahad to the rescue," I sneered. "Go and get yourself evacuated. I'll take care of Sharon. The attacks so far have been so unpredictable that she'd probably be as safe here as anywhere else, anyway."

I started to walk away, but it was not going to be that easy. Charlie reached out a beefy arm and grabbed me by the shoulder.

"Don't try to brush me off, Bill," he said. His face was very pale. "I had trouble with one of your playmates downstairs—and I'll take care of you too, if necessary."

As if I hadn't got enough trouble already, without bothering about this love-sick clown. I knew that the guards would be up for him soon, but I had no patience to wait for them.

I grabbed the arm that was holding my shoulder and, twisting my body, tried to throw him. In the books it looks easy, but Charlie was

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all of fourteen stone and light on his feet. He grabbed me round the neck and dragged me to the floor.

"Where is she?" he gritted in my ear. I struggled, the blood drumming in my ears.

"What on earth do you two idiots think you're doing?" said a cool, feminine voice.

Charlie's grip relaxed and he rolled off me. "Sharon!" he said, struggling to his feet. "I've come to get you out of here before the whole city is flattened."

"Don't listen to the fat slob—he's in a panic," I said. "You're safe enough here."

She looked us both over witheringly. "I'll take my chances with J.F.," she said. "There's a job for me to do here and I'm going to stick with it."

I read the expression in Charlie's eyes as he watched her walk away. Dogs look like that after a beating.

"That's the way it is, friend," I said. "Better fade before the guards get here, huh?"

He was unresisting as I pushed him into the nearest elevator and placed his finger on the button.

"Go down to the basement—you may be able to sneak

out of there without getting yourself cut up in small pieces," I said. He pressed the button dumbly and the elevator descended out of sight. Poor dope . . .

J.F. WAS sitting at his desk when I entered the office. I wondered if he had been to bed at all.

"How's it going?" I asked.

"They got Glasgow last night with the vibrator weapon—and Paris is just a hole in the ground; they used atomics there." He brought his hands together and interlaced the fingers. Then I realised something—he was still sitting down.

"What beats us at the moment is the random manner in which they choose their objectives. How can we plan a defence when there is no way of guessing where they will strike next? Correlation of Radar reports gives the number of their ships as between six and nine. Take it at top rate—nine ships seems a small force to use to conquer a planet."

"If that is their objective," I said.

"What else could they have in mind?" said J.F., unlock-

ing his hands and leaning forward.

"Look, J.F. War to you means one country fighting another in order to take over what is left—but it seems to me that these beings are so far ahead of us that they probably look upon humanity as some sort of verminous insect life which they consider it their duty to destroy."

"A very pretty theory, Billy," he said, raising one eyebrow. "But I won't buy it. If they are so smart, why don't they just cruise round the globe spirally in formation? At the speeds they travel they could sterilise the entire planet in a few hours."

He had a point.

"All right, let's take another tack," I said. "If they intend to take over, why haven't they landed—or at least tried to communicate with us?"

"Perhaps the time is not yet ripe," countered J.F. "They may consider that a sustained display of destructive power will cow us and make future negotiations easier for them."

I began to see a block in the mind of J.F. His universe was anthropomorphic—even an infinitely superior alien being was to his conception

merely a larger version of himself, with the same urges and ambitions magnified to the *n*th degree. Somehow I didn't see it that way.

"How do you propose to fight them?" I asked.

"At the moment our Air Force has nothing that will go fast enough or high enough to get anywhere near them, but we're working on it."

"Then what? So you put a ship on their tail—what are you going to arm it with?"

"We're working on that, too," he said, with a grim smile. "Remember what Norbert Wiener said about the fallacy of security back in 1949? *"Once a scientist attacks a problem which he knows to have an answer, his entire attitude is changed. He is already fifty per cent. of his way towards that answer."*

We shall throw their own frequency vibrator back at them—Goldman is sure his team can do it, if they have enough time."

Crazy as it sounded, I wanted to believe him. But at the back of my mind nagged the thought that the aliens would be sure to carry a defence against their own weapon.

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THE days dragged by. All over the planet the destruction continued.

Despite our well planned propaganda the country was swept by a feeling of defeat. Groups sprang up, demanding that we should surrender to the aliens and save the people who were still alive. Surrender—that was a laugh! How could we, when no contact could be established? In the East things got out of hand. The militant surrender movement overthrew the government and added to the general carnage in the process.

The nights? I try to forget about them. I would lie dead beat on my bed and fight against the sleep that always won in the end. The dream was waiting for me. For a while I would lie in frozen horror and then I'd scramble up out of sleep into a trembling wakefulness, to find Kennedy sitting on the edge of his bed muttering incoherently.

One night I woke up and looked over—we didn't bother to switch off the lights any more. He was still lying quietly. Puzzled, I got out of bed and walked over.

The blood was caked on

the sheets and the pillow, but he was smiling. No more dreams for Joe . . .

At breakfast that morning the Nightmare Club was born. Those of us who had Jiminy seemed to be the only ones who were haunted by this nightmare. We had long since ceased to be pleasant company for the other occupants of the building and by tacit consent a corner of the canteen was always left at the disposal of our group. We decided that in future, or as long as our sanity held out, we would prefer to take our hell communally. I arranged with J.F. that the recreation lounge on the fourth floor should be set aside for our use. He had begun to rely less and less upon these men who had once been his main executives, as he realised that their waking thoughts were pre-occupied with the phantasm which was gnawing at their sanity. He agreed readily, the arrangement would enable him to keep the group under surveillance without difficulty.

The next night thirty-five of us sweated it out in a room that stank with cigarette smoke—and fear. In the security of the herd sagging

spirits were revived, but around 3 a.m. the card games died down and conversation lagged. Thirty-five deathly tired men sat with drawn faces and heavy eyes.

Somehow I must have dozed off, my body no longer able to resist the beckoning of sleep.

I found myself in a world of alien horror, filled with fantastic shapes and flashing illumination. Inside my brain fingers were twisting and pulling at my sanity as the strange symbolism flowed into my consciousness. With a wrenching effort I willed myself to awaken. The lounge and its occupants reappeared as I opened my eyes, but the dream continued—merging with reality in a confused double exposure effect.

On the other side of the room someone leapt out of his chair screaming. He fell to the floor and lay writhing. The lounge became a bedlam as others struggled to release themselves of the force that was pouring into their unprotected minds.

I lurched out of my chair and made for the door. The corridor outside seemed strangely twisted as though

viewed through a distorting lens. Feeling my way along the walls like a drunk I staggered into the elevator and pressed a button. I stumbled out at the 25th floor and into J.F.'s office. Somehow I knew that here I must find the answer . . .

J.F. seemed completely oblivious of my noisy entrance. He was standing with his back to me, staring out into the night sky. I followed the line of his gaze—and realised why I had come there.

One of the alien ships, a great globe of shining metal over two hundred feet in diameter, hung motionless over the city. And inside my mind a little knot of transistors was picking up the dream—the thought emanations of the ship's occupant. There was only one, and the dream was fading as his consciousness lapsed into sleep—or could it be death?

J.F. turned and noticed me for the first time.

"There is the enemy," he said. "Just pray that he will stay there for another couple of hours and give us a chance to try our weapon. Goldman and his team are working at

top pressure to instal the experimental wave generator in a plane. This is a ready-made opportunity to find out just how invincible these aliens are."

"And call down a shower of hellish reprisal on our heads," I said. "Now is our chance to contact them and stop this senseless slaughter. This dream those of us with Jiminy have been experiencing . . ." I explained my theory briefly.

J.F. looked at me cynically. "If they are telepathic they must surely understand the suffering they have caused? Beings on such a level of awareness could not ignore it." He was still stuck with his man-centred universe.

"Look at it this way," I countered. "Why do you think they have destroyed densely populated areas, but with no seeming plan of conquest? I believe that they found the concentrated thought emanations of thousands of humans discomfiting in a similar manner to that experienced by those of us who have the equipment to receive their thoughts. No doubt the degree of irritation has been considerably less in their case, but what do you

do when a fly buzzes round your head? You swat it—that's what they are doing."

"But this time the fly is going to hit back," said J.F.

"Maybe, but it's a wise man who knows when to step down. They must look upon us intellectually as less than the dust, but if we use the main Jiminy transmitter in an effort to negotiate with them, they may grant us the right to live in peace. Surely it's worth a try? If you take offensive action against them we shall be wiped out unmercifully."

"There will be no surrender," roared J.F., towering over me. "Earth will destroy these invaders or perish. Death is preferable to the humiliation of alien domination." For him that may have been the truth.

The visorphone on his desk hummed briefly. He walked over and switched it on. The face of Goldman appeared on the screen.

"The work is completed. I am about to take off."

"Good work, man," said J.F. "You should be over the city in about fifteen minutes. Remember—the hopes of the entire human race travel with you."

Even at a time like this he has to be rhetorical, I thought. "Let me at least attempt to contact them in the time that remains," I said.

J.F. reached in a drawer of the desk. When his hand came back into sight it was holding a pistol. He aimed it at me, one corner of his mouth twitching.

"And warn them of what we intend to do? The time of talking is past, Billy. If you make one move to leave this room, you're a dead man."

I heard the sound of the door opening behind me.

"There has been a disturbance on the fourth floor. The——" Sharon's voice ceased in a gasp as she saw the gun. I stood perfectly still, waiting. Would she help me to get away from this maniac and save what was left of Earth?

I felt a surge of nausea as she walked swiftly past me and joined J.F. Sure, I'd known how things stood for a long time, but this was final.

"Are you all right, Doctor?" she said. "These Jiminy men have gone berserk. Shall I call the guards?"

"That won't be necessary,

my dear," said J.F., with a smile. "He is not going to start any trouble—are you, Billy?"

I turned my back on them and walked towards the wall, looking at the alien ship. We'll all be dead soon enough, I thought. It seemed unimportant now. I waited for the bullet to crash into my spine, but it didn't come. The dream was still there, at a lower ebb as the alien mind relaxed in sleep.

Far over to the east of the city a swift-moving dot of light appeared.

"That will be Goldman," said J.F. He moved across the room and stood near me. "Your dream will soon be gone forever, Billy."

I ignored him. I watched fascinated as the dot grew larger and was discernible as a huge transport plane. I heard a movement behind me and turned.

Through the open door of the office walked a dishevelled band of men. The other members of the Nightmare Club had come to witness the end. I turned back to watch the coming battle. The transport plane was about five miles away from the shining globe and closing in fast for

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the assault. Suddenly a false dawn of shimmering light bathed the sky. When it faded the transport plane had disappeared. J.F. exhaled sharply.

The emanations from the sleeping alien on board the ship remained unchanged. Then they were overwhelmed as an infinitely more powerful stream of impulses flowed into my mind. This time the symbolism had a dreadful coherence. The message was intended for we puny humans.

"Enough! We could not allow you to use the weapon—it would have harmed them. Forgive them . . . for these are our children. Children of all races are cruel in their ignorance. War and destruction are symptomatic of the atavistic child mind, whether in individuals or in a race.

"We enable them to re-enact the barbarous ways of our past in order that they shall become in their adulthood integrated beings like ourselves. We are sorry that you have suffered at their hands, but it will be a means of bringing your own race nearer to maturity. Those amongst you who are receiving this message will soon

understand our meaning—the others will learn in the centuries yet unborn. You need have no fears for your future safety—they will not be allowed to play here again . . ."

The "shining globe disappeared as the soundless voice faded, and we knew that the rest of the "children's" ships, hovering over other parts of the planet, were gone also.

WE KNEW . . . Henceforth the group of exhausted men who had received the message would never be alone. Our minds intermingled in a warm mesh of telepathic awareness. Aided by the catalyst of the adult alien's communication, Jiminy was the key to the next step in the evolution of man. In years to come humans would be born with the aptitude, but until that time we would be the guardians of a newer, saner world.

"The weapon! We must build again!" shouted J.F. He hurried over to the visor-phone, Sharon walking beside him.

We watched them both pityingly. They needed each other. Poor Neanderthals—their world was ending . . .

Brain and Body

by PETER SUMMERS

It is probably obvious to most people that a man cannot live without a brain, even though some of our acquaintances *seem* to get along in that condition! But not many people know the really tremendous part played by the brain in every aspect of our lives. It would be safe to say that not one single bodily function takes place independently of the brain. All these functions are unified into a coherent whole in the organism, but for the purposes of description we shall have to consider them separately.

The brain is made up of three main parts—cerebrum, cerebellum and brain stem. The cerebrum consists of the large convoluted areas that fill most of the cranium. The cerebellum is a smallish mass of nervous tissue lying at the back of the skull. The brain stem is that part of the brain which runs forward from the top of the spinal cord, past the cerebellum and into the cerebrum. Naturally, all three parts are in close nervous con-

nection with each other. It will be convenient if we look at these parts in the reverse order to which they are mentioned above.

A series of cranial nerves is given off from the hinder part of the brain stem—the part known as the medulla oblongata. There are, in man, twelve pairs of cranial nerves, one of each pair arising on each side and supplying various structures lower in the body. Briefly, the cranial nerves supply the nose, ears, eyes, tongue, heart, lungs, stomach, intestines and various voluntary muscles in the neck and jaws. Impulses pass down them *to* these structures, and up them *from* these structures. They are rather similar to the *spinal* nerves which come off in pairs from the cord and supply every part of the lower body. In this article we are not so much concerned with the cranial nerves themselves as with their central connection (i.e., their terminations in the brain stem).

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The cerebellum is in nervous connection with the cerebrum and brain stem in such a way that it acts as a kind of overseer to the activity of these parts. One rather remarkable fact about the cerebellum is each side receives impulses from parts of the body on its own side but sends connections to the cerebrum of the opposite side.

By far the largest weight and volume of the brain is possessed by the cerebrum. It is a truly enormous structure, and incredibly complex in construction. Unfortunately, considerable regions of it are of unknown function, though we are beginning to get an inkling of the part it plays in our lives. The cerebrum consists of many millions of nerve cells and fibres, interconnecting with every other part of the brain. It has four main lobes on each side—frontal, parietal (top and upper sides), temporal (lower sides), and occipital (back).

So much for the brain's anatomy. Now we shall see what its functions are. To begin with, and very obviously, it controls all the voluntary muscles. These are the ones that enable us to move the various parts of our

bodies at will—limbs, head, neck, eyes. This *motor* function is subserved in the main by a region in the middle of the parietal lobe of the cerebrum. But the cerebellum is involved, too, inasmuch as while the cerebrum initiates various movements, the cerebellum co-ordinates them. In this way we are assured, for example, of moving our eyes in the same direction in which we move our heads. The cerebellum is also concerned in the fine adjustment of movement: the cerebrum moves an arm, say, and the cerebellum controls just how much the arm moves in order, for example, to pick up something. People with disorders of the cerebellum tend to "overshoot" when reaching for things; they can move their arms but they are not so good at controlling the movement. As with arms, so with the rest of our musculature—the cerebrum and cerebellum work together in the effective control of movement.

But there are not only voluntary muscles in the body. There are involuntary ones, too. These are the muscles that we do not consciously move (though with

some of them we are able to exert control on occasions). Involuntary muscles are found in the heart, alimentary canal, bladder, uterus, ureter, bronchi, pupil and arteries. Here you will see, if you think about it, the muscles are concerned with routine processes which are carried on more or less unconsciously. It is as though the conscious mind has enough to do thinking about other things without being bothered about what the stomach's doing or how wide are the arteries in the foot.

These involuntary processes are controlled by the brain through the so-called autonomic (self-regulating) nervous system, which is made up of sympathetic and parasympathetic nerve fibres. By and large, the sympathetic fibres excite or speed up a process, whereas the parasympathetic fibres tend to inhibit or slow down a process. The working of the two types of nerve is finely and beautifully adjusted to the changing conditions and requirements of the body.

Thus, the autonomic nervous system, controlled from the medulla oblongata, hypothalamic and cortical areas of

the brain, maintains a healthy state of breathing, heart rate, blood pressure, digestion, excretion and vision under the varying states of the environment. There are other, more minor functions of the autonomic nervous system that we need not enter into here. At times, changes in the environment are so drastic that the autonomic nervous system alone is unable to cope with them. On such occasions the rest of the nervous system takes over and the control of the process becomes voluntary. A good example is breathing. We all know that most of our lives we are not really aware that we are breathing; nevertheless we are perfectly capable of breathing fast or slow or stopping altogether (though not for long!) at will.

It is said that some people are able voluntarily to control most or all of their involuntary muscles. Indian fakirs are said to be able to make their heart-beat fluctuate at will, and to widen and narrow their pupils in a similar manner. Although the evidence for these things is a little shaky, there is certainly no theoretical objection to them, and there is a good

deal of precedent for them. It may well be that by intense concentration and application to the task one may bring involuntary muscles under voluntary control. Whether there is any point in doing so is another matter!

We have now covered, in rather cursory fashion, the brain's control of our muscles. Many other things are controlled by the brain, too—sensations, for example. We are aware of ourselves and our surroundings only through the mediation of our senses. These are sight, hearing, smelling, touching, tasting, and the so-called proprioceptive, interoceptive and exteroceptive senses. If one or two of these senses is lost or absent, the person is severely handicapped, though some of the others may become sharpened. If *all* of these senses were lost (no recorded cases known) the person would be unaware of the world and of his own existence. He would probably survive only a short time unless constantly cared for.

The first five of these senses are well-known and need no explanation here. We are well aware of what happens to a person who lacks one or

more of them. More interesting from our point of view are the last three senses. The proprioceptive sense enables the brain to be aware of the disposition of the body. Tiny structures ("end organs") in the muscles, tendons and joints are constantly sending messages to the brain, which is thus given a complete picture of just how the parts of the body are displaced. This is an important picture, for without it the brain is quite incapable of causing controlled movement. If the proprioceptive sense is abolished (experimentally) the organism behaves as though there were something wrong with its cerebellum. And, indeed, it has been shown that the nerves from the end organs do run to the cerebellum. Thus, organised, purposive movement is impossible without a proprioceptive sense: the organism could not even feed itself.

In the depths of many organs such as the intestines, bladder and heart, there are end organs which are part of the interoceptive sense. They are sensitive to stretch and keep the brain informed of the state of dilation of the organs. Under normal condi-

tions we are not aware of the functioning of the interoceptive sense, but when something goes wrong (distended stomach, for example) we perceive pain from the affected region and, if we are sensible, we do something about it. Thus, the interoceptive sense maintains the normal working of various organs, and lets us know when things go wrong with them.

On the skin in every part of the body are end organs which are sensitive to a variety of stimuli—heat, cold, touch, vibration, pressure, etc. These are the end organs of the exteroceptive sense. Through them we are made consciously aware of our *immediate* environment, that part of our surroundings which is in contact with us. In this way we know whether what we are up against is hot or cold or sharp, and so on. This is really essential knowledge. Several cases are on record of people lacking in part or whole of the exteroceptive sense. They have to be very carefully watched, for they do not know that, say, a cigarette is burning their fingers until the damage has

gone deep and a fairly serious wound has resulted. The condition is especially troublesome in children—who just cannot understand why their parents warn them against hot poker and suchlike.

So, we have now seen how the brain keeps us in touch with our surroundings and with ourselves. Earlier, we saw how it looks after the two kinds of muscle that we possess. Briefly, we can say that the brain also controls the secretion of several glands, adrenals for example; it may also, according to recent research, control the whole of the system of endocrine (ductless) glands, via its possible action on the pituitary gland. If this latter is the case, then the brain is responsible for maintaining the functions of metabolism, growth, reproduction, and responses to stress conditions. Thus, the field of activity of the brain may range over far more of the body than was hitherto thought—and that was enough in all conscience!

Next month we shall take a look at the fascinating story of the interconnections between brain and mind.

It was all that he wanted.
And it was all that was left.

Asteroid Crusoe

by Jonathan Burke

HE had always been fond of music, and now music was what he missed most of all. It was absurd, perhaps. He knew that he ought to be thankful to be alive. But once you had got used to the idea of being still alive when all the odds had been against it—and he had had two years to get used to the idea—you began to fret about things. About home, and food, and the spaciousness of green fields. And about music.

At times he felt so lonely and wretched that he wondered whether he might not just as well pull up the generator leads and let himself cease to exist.

But life is tenacious. It was no easier for Clifton to turn off the power and let the atmosphere seep away than it would have been to drive a knife into his heart. There was always the feeling that something might happen: a ship might come, he might at last be rescued.

At this stage in his musings and mutterings, talking half-insanely to himself, he would make another attempt to send out a radio message. It reached out into the void and called for help.

Never was there any reply.

Then he would stride angrily about the rocky ground outside the ship, thumping his magnetic boots down as though to shatter the diminutive world on which he lived—or, rather, existed. He would step out furiously on a three-mile walk . . . and by keeping straight on he would come back to the place he had started from.

On the way he would sing, sometimes softly, sometimes at the top of his voice. There were rarely any words to the things he sang, though sometimes he fitted foul lyrics to exquisite tunes and hurled them defiantly at the stars. Then he would succumb to the loveliness of the melodies that interwove in his mind, and tears would come to his

eyes. He would try to hum a Bach fugue, and the impossibility of singing three or four lines at once would bring on a great wave of sadness. He wanted to be sitting at home with the radiorgan thundering in his ears, producing from the depths of its small cabinet all the intensity and magnificence of the music that had been written so many centuries before.

Never again. Would he never hear Mozart and Bach again?

The asteroid was a small one. It was no more than a sizeable chunk of rock revolving somewhat erratically about a planet that looked, from this distance, about the size of a small moon. The sun of this dead system was feeble, but it did provide enough energy for the solar batteries in the ship. And the batteries kept the generator slowly thumping, so that the leads plunged into the ground did their work and manufactured an atmosphere.

It was a great invention, that atmospheric generator. No matter where you came down, you could rely on producing breathable air. Of course this was produced by

a process of breakdown which would, in the long run, eat away the whole of the world on which you happened to have landed. But even a small world like this one would take, on Clifton's reckoning, just under three hundred years to dissolve under that constant churning and erosion. Clifton didn't think he'd be much interested in what happened three hundred years hence: he had enough to make him depressed right here and now.

The failure of his ship was still unaccountable. Over and over again, when he got so bored that he would have gone mad if he hadn't been able to find some task with which to occupy himself, he had checked over every line and connection in the bowels of the small vessel. But even now, smashed as the ship was, you could tell that there had been no ordinary mechanical defect. For some reason the motors had stopped working: that was all. They were intact, but they refused to spark into activity. The osmator — the atmospheric generator — functioned all right, but the simpler mechanism of the power drive had simply packed up.

The silence had struck the ship when it was some miles away from this asteroid. One minute the faint vibration had been there as usual, reassuring in its gentle steadiness; then there had been that uncanny hush, and the ship had started to fall, drawn by the gravity of the nearest planet.

There had been a crash. His two companions had both been killed as the nose splintered against the asteroid.

He wished he had died with them. That would have settled everything. Instead of that, he was condemned to solitary confinement here, growing tasteless food in the hydroponic trays he had moved out of the ship into the open, and doing dozens of jobs every day that didn't need doing—jobs he contrived so that he would not sit and think too much, and would not hear the echoes of music too clearly or too often.

He spent a fortnight experimenting with plants from the trays, trying to establish them in a corner of the rocky asteroid. Powdering the splintered surface of the asteroid by means of intensified output from the generator, he fiddled for

hours and days in the hope of starting a garden. But he had never been either a keen or a competent gardener.

The third year was slipping past him. He found that he was beginning to have hallucinations. When he talked, he thought somebody answered. Thinking about St. Paul's Cathedral, set in its fine grounds and encircled at a distance by the splendid white terraces of the Space Control Commission, he could almost persuade himself that he was there.

"I'll soon be completely insane," he said aloud, as though demanding an argument.

There was not even an echo.

He heard music, faint and far away. It was always audible only when he was not listening: as soon as he concentrated and tried to hear it properly, there was only utter stillness.

Sights, and sounds, and feverish colours, and a bout of quivering hysterics one night when he awoke and felt the pressure of nothingness upon him in the darkness . . . he knew that it was only a matter of time before reason deserted him.

So that when the space ship appeared, he carefully paid no attention to it at first.

OBVIOUSLY it could not be there. He had sent out so many messages into the void, and there had been no reply. He had promised himself so often that sooner or later a ship would find him—and now his longings must have given birth to this mirage. There could not really be that golden vessel in the sky, dropping slowly upon the asteroid.

And besides, it was like no ship he had ever seen before. It was obviously something fantastic, some product of his own disordered imagination. There couldn't be a ship like that.

It continued to descend. It was a great, distorted bulk that, from this angle, threatened to dwarf the asteroid.

Clifton, who had been doing some futile cleaning of the crumpled plates of his own ship, straightened up at last. The furtive glances he had cast over his shoulder had shown the newcomer approaching more and more solidly; it was no use saying any longer that this was a figment of his imagination.

He stared up as a panel in the side slid back and a small lifeboat sprang out from the parent ship.

He licked his lips. Then he cleared his throat. He was going to speak to someone: he would have to find words and phrases, have to face somebody . . .

He had visualised many things when he dreamed of his eventual liberation: but he had not expected to feel as frightened and panicky as he did now.

The lifeboat swung around the asteroid in a neat arc, then came in to land gently some thirty yards away. There was no sound: no pounding of motors, no angry splutter of braking rockets.

A door in the side opened. Something got out.

Something. It was not human.

Clifton backed away until he came up against the hard metal of his ship. He put his hands against the smooth sides, as though to draw strength from what was ordinary and familiar.

The thing that was approaching him had two very short legs and three arms. Its body was broad and squat, supporting a heavy head. Its

eyes . . . were they eyes? Certainly there were two bright discs at the front of the head, and a gash that must be a mouth below them. But there was no expression on the face: it was a pale, vaguely reptilian mask.

Fear gurgled in Clifton's throat.

The creature spoke. It said: "*N'avez pas peur, monsieur.*"

Clifton gaped, speechless for a moment. Then he said: "What the hell . . ."

The creature stopped and contemplated him. It put its head on one side.

"I try again," it said at last. "Is this your language? Am I right in supposing that the words you used a moment ago belong to the tongue which was called English?"

"Yes," breathed Clifton incredulously. Then he said: "Wait a minute. What do you mean—*was* called English?"

"You have been — ah — marooned here for some considerable time?"

"Getting on for three years."

"Yes. One sees. One understands."

"Does one?" said Clifton, suddenly losing his fear and

feeling a wild surge of impatience. "What's been going on? What are you talking like that for—and who are you?"

"I am Luac of the Derisi—that is as near as I can get to it in your verbal equivalents. We of the Derisi came to inspect the solar system in which there had been such an appalling explosion——"

"Which solar system?"

"Your own. It is a long way from here, of course. You were lucky to be so far away when the blow came."

"Lucky?" echoed Clifton wryly.

The newcomer did not seem to catch his meaning. It went on in a faintly pedantic, lecturing tone:

"The devastation was truly frightening. For the past two years we have been carrying on detailed investigations in the hope of salvaging any relics of your terrestrial culture, but we have found little worthy of preservation."

"Oh, you haven't?"

"The planet that you call Earth was of course the worst sufferer. The war between the Martian colonists and Earth reached a pitch of such insanity that the lust for destruction evidently over-

rode all concern for the future of the race. Even from our galaxy we were aware of the intensity of the conflict. Since one of our earlier disastrous wars, we have kept the most careful control of technological progress; but your people did not seem to have appreciated the necessity of such control."

"Things were pretty much out of hand," Clifton conceded.

"We do not know the principles of the weapon which brought on the final catastrophe," said Luac. "Nor do we wish to know. That is one line of investigation that we have not followed up. All we have been able to discover, without taking ourselves in too deeply, is that a scientist in the Martian group discovered a way of projecting a beam—or possibly a wave—that spread out through all space, needing only the faintest vibration to be effective—a pulse on a wavelength that at once nullified the motors of any standard space ship."

"So that's what it was! That's what hit us!"

"Even as far out as this?" Luac marvelled. "It is typical of your race," he added severely, "that they should

not hesitate to use for murderous purposes a force that might very well have upset the entire cosmos." His wide eyes stared accusingly at Clifton, as though Clifton had been personally responsible. Then he went on: "The effects were far more widespread than the inventor or the Martian generals could have foreseen. Not only did the power systems of both planets collapse, simply brought to a standstill by this penetrating vibration and rendered immobile from then on, but also any ship out in space at once ceased to function. And in the great generators of Earth and Mars some unexpected reaction set up. Cities dissolved. The Earth was ravaged by something far worse than any plague—a chain reaction set in that almost literally scoured the top layer off the planet. Few places escaped: and even when buildings were left standing, the human beings were eaten away by the insidious radiation."

"You mean . . . there weren't any human beings left at all? There isn't . . . isn't anybody left?"

Luac nodded solemnly. "You are the only living

member of your race we have found. We searched Mars and the Earth for any survivors who might help us in our survey of your shattered civilisation, so that our records might be checked. But there was nobody."

Clifton began to laugh hysterically. Luac made no attempt to interfere. After a while Clifton slumped to the ground, and stared up stupidly.

"That's fine," he whispered. "The last man alive. What do you know?"

"What do I know?" Luac undoubtedly looked puzzled this time. "I know that by the purest chance we have found you. We were on our way home. But now I believe we should turn back. We will take you to Earth and you can help us."

"To Earth?" The words sank in. "Back to Earth?" said Clifton remotely, dreamily.

NOW that he was going home, he was not sure that he wanted to go, after all. The prospect of seeing his home planet ravaged and dead was not one that appealed to him. This was going to be some-

thing very different from the dreams he had had on that lonely asteroid. Then, there had always been the belief, tantalising as it might be, that somewhere out there in space Earth still existed: there were still towns and cities, the gaiety of the video shows and the splendours of music. Even in wartime there had been gaiety and splendour.

Now there was nothing.

He hummed abstractedly to himself as he sat in his cabin. It was an oddly-shaped cabin, for the Derisi had different tastes and different physical requirements: their floors were all faintly concave, and parallel lines were evidently anathema to them. The construction of the entire ship gave Clifton more of a sense of being caught up in a dream than his life on the asteroid had done.

"May I come in?"

It was Luac, formal and courteous as ever. Clifton wondered whether the courtesy meant anything at all: whether, perhaps, it was just coldness and indifference—or perhaps the result of Luac's pride in being able to speak so many Earth languages with such precision and appropriateness.

"How far to go now?" asked Clifton.

"Two more of your days, and we shall be there."

There was a silence. Luac contemplated Clifton. The scrutiny was bland but irritating.

Clifton began to hum again, picking his way through a theme that gradually identified itself as the last movement of the fourth Brandenburg Concerto. As usual, he got tied up when the parts started to interweave into their beautiful complexity.

Luac said: "You are interested in music?"

"I was. It meant a lot to me."

"Indeed? That is excellent. We have been unable to arrive at any conclusions about the music of your race. Somewhere we must have gone wrong. There are so few fragments left, of course, and none of the automatic instruments which presumably played your music can be operated at all. We tried to reconstruct various compositions from ancient manuscripts that turned up from time to time. But all we could produce was the most

appalling noise that proved very harmful to our ears. Somewhere we must have gone wrong. You must assist us."

"I was never a musician myself," said Clifton with infinite regret. "I can't even sing or hum in tune——"

"No," said Luac. "I thought to myself how unpleasant your voice was."

"Thanks."

"But if we play to you what we have evolved, you will be able to tell us where we have gone wrong, and then we shall understand the significance of the work of your composers."

Clifton wondered what manuscripts had survived the catastrophe. If there were some Mozart, some Bach, and if there were somewhere a piano that had not been destroyed . . . surely methodical creatures like the Derisi would be able to work out on a purely mathematical basis the meaning of notes and time values? And then, in good time, he would hear once more a sonata—hear it being actually played, instead of as a blurred and faulty echo inside his head.

The hope buoyed him up.

He became impatient as the hours went slowly by. Luac and his colleagues asked him questions about snags they had encountered, and he answered them, but his mind was not on what he was saying. He could not arouse much interest in the architecture of ancient Rome, a city which he had visited only two or three times in his life. Nor were their delvings into philosophy the sort of thing he could cope with. They had found innumerable books and had acquired disjointed fragments of religious creeds and philosophies: with his help they hoped to fit the fragments together, but they were going to be disappointed. The earnestness of the Derisi was rather pathetic. A civilisation had died, and they considered it their duty to record as much of its achievement as they could. Records would be filed away for reference. Specimens would be lodged in museums. Books would be read and discussed. Anything that was worth preserving would be religiously preserved, and perhaps even—or so it was hinted to Clifton—adapted for use in their own society.

"In many ways," said Luac

as they drew closer to Earth, "your communities were in advance of ours. We have found some remarkable paintings. In the visual arts—the plastic arts—you did things that appeal to us very much. That is why we are so disappointed at not being able to convert your musical notation into a sound which pleases us. On paper, much of it has a mathematical beauty. We must find out where we have gone wrong."

The ship slowed. There was no thunder of rockets, no trembling of the great power thrusts that Clifton had once been familiar with. There was no more than a faint sensation of a gentle hand pushing against his shoulders, forcing him slightly forward. Through the ports of the ship he saw clouds below, then snatches of a green and brown tilted landscape. Sunlight struck up from the water.

Water . . . the sea . . . the freshness of Earth.

This was home.

But it was an altered, unrecognisable home. As they lost altitude, he saw how bitterly the landscape was scarred. The remains of the

cities were little more than ugly burns on the face of the land. Vast acres were charred and desolate, without even a weed struggling to maintain existence on the blackened surface. Gaunt husks of buildings brooded over the devastated landscape like mocking skeletons.

"That building," said Luac, beside him, "did you know that building? It has puzzled us."

"Fancy that standing up!" said Clifton. "Everything else flattened, and that's still there . . ."

"It is a memorial? A religious symbol?"

"It was called the Eiffel Tower. They rebuilt it in the middle of the twenty-first century. Originally . . ."

He faltered. How had it come to be there in the first place? It was just one of those things that you knew was there and took for granted, like the Statue of Liberty and Hans Andersen's mermaid at Copenhagen, and the Admiralty Arch.

During the next few weeks he found that this applied to a great many things. If the reclamation of human cul-

ture depended solely on him, then it was a poor lookout for human culture. He had been to most places in the world, and seen a great many famous buildings, and read a lot of microbooks and studied a hell of a lot of subjects while taking his space navigator's course. But when it came to filling in a detailed background, and fitting each hazy part of his general knowledge into a comprehensive scheme—well, he was at a loss.

The Derisi had come across references to Einstein in salvaged documents, and wanted an explanation of the much-publicised Theory of Relativity. Clifton did his best; and a pretty poor best it was. At last, through his fumbings, Luac saw a gleam of light, and suddenly ended the questioning.

"We had not realised that it was *that*," he said in a gently contemptuous tone. What he meant was, thought Clifton, that to them Einstein's ideas were old stuff.

Then what *could* he offer them?

He said: "Look . . . you said something about music.

I'd give anything to hear some music again."

"It meant a great deal to your civilisation?"

"To some of us. It certainly meant a lot to me."

"Very well. We will let you hear what we have achieved."

LUAC was a great one for explanations. He (Clifton found that he was already regarding Luac as "he" rather than "it") liked to describe exactly what steps had been taken in any particular case, just what difficulties the Derisi had encountered, and how they had coped with them. He described at great length the way in which they had grasped the basic idea of music in the human term. He told how, discarding the only two radiorgans they had found as being utterly beyond repair, they had experimented with the remains of other electronic devices, but been unable to produce any logical sequence of sounds.

"We speedily realised," he said with a sort of smug satisfaction, "that we must deal with essentials. It was evident from your records that

music had originally been a primitive business. In the distant past it was produced by individual instruments played by human beings. Bows were dragged across strings, and one gathers that breath was blown into brass and wooden instruments."

Clifton nodded. "There was still quite a bit of that even in our mechanical age. Small groups of enthusiasts—cranks, a lot of them—used to play the music on old instruments instead of leaving it to the pulse sorters of the radiorgan."

"We found one such instrument."

"A violin . . . a piano . . . ?" Clifton leaned forward eagerly.

"It was what you called, I believe, simply an organ. I fear that there may have been something grievously wrong with the instrument, as we were unable to produce anything but the most jarring sounds from it. It was in a ruined church, and no doubt the weather and the effects of radiation had falsified its pitch in some way. Our foremost tonal expert was sure that he had established the correct relationship between

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the written notes and the keys and pedals of the instrument. But somewhere he, also, must have gone wrong."

"Can I hear this? Where is it?"

"We have made a recording."

Luac produced a small spool of tape and inserted it in one of the innumerable small machines that Clifton had become familiar with recently. Automatic recorders, analysers, classifiers and calculators lined the walls of this cabin in the ship.

"You must tell me what is wrong," said Luac. "We do not wish to dismiss human music entirely without giving it a fair trial, and if you can explain to us where our theories have gone wrong we will start a new report and adjust our conclusions as necessary."

Clifton waited impatiently. He was prepared to make allowances for almost anything. No matter how wheezy the organ might be, no matter how stiffly and unnaturally it might be played by one of these uncomprehending Derisi, he was sure that the mere sound of it would be like a long draught

of cool water to him. He had been thirsty for too long. Bach played on a ragtime piano would be wonderful after this long spiritual drought.

It was Bach, all right. But it was not played on a ragtime piano.

The organ must have been one of the old seventeenth century ones that had been carefully preserved by lovers of music for so many years. Its high notes fluted delicately, its pedal notes were sonorous and yet as clear as those of a cello.

The opening flourishes of the great Fantasia in G Minor reverberated through the cabin. Gradually the magnificent edifice was constructed, overwhelming in its splendour.

Clifton forgot all that Luac had said to him. He sat forward on the edge of his twisted, unnaturally-shaped chair, and lost himself almost at once in that incomparable sound—sound such as he had never hoped to hear again.

The Fantasia reached its conclusion, and the theme of the Fugue was started.

Once again the work of building commenced—build-

ing, interweaving, adding beauty to beauty until all that could be said in the world seemed to be here in existence, here and now.

Clifton had forgotten that Luac had complained that something was wrong with the organ or with the music. He had forgotten Luac himself. He knew only that this was Bach, magnificently played . . . perfect.

The Fugue thundered out on the swell. Clifton began to perspire gently, waiting for the last colossal climax.

And there was abruptly, in the middle of a bar, silence.

He was jolted back to awareness of his surroundings.

"What happened? The thing must have broken down."

"My colleague who was playing that piece," said Luac, "found himself unable to go on." His own face had turned an unhealthy green colour, and he spoke as though he were in pain. "The horror of the noise he was making overpowered him."

"You mean . . . you can't appreciate that? It doesn't mean anything to you?"

"The party who were

working in that area were so distressed that for a short time they were, I regret to say, hysterical. In their anger they destroyed the organ. I fear I cannot blame them."

The sense of incredible loss was like a searing pain. Clifton said: "But it was wonderful. I never thought I'd hear such music again."

"You mean that it was meant to sound like that?" said Luac gravely. "There was nothing wrong with it?"

"Nothing at all. And you—you destroyed the organ?" Clifton reached out suddenly. "But you've got that spool. That's the only piece of music left in the world now. You've still got that."

Luac removed the spool from the machine. Without haste and without any apparent malice he ran his thumb down the fine tape.

"Now," he said calmly, "that is erased. We retained this one recording in the hope that one day we would make sense of it. We did not wish to discard anything that might somehow have some worth to it. Now I can confidently say that we have nothing to learn from it."

"You mean that by doing

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that you've . . . obliterated it?"

Luac nodded.

It was the end of a dream.

Now there were only echoes. Clifton felt his throat contract. He heard Luac speaking to him, but the words did not penetrate. He knew only that there was no hope now. The G Minor Fantasia and Fugue would linger on in his mind, fading, distorting, being jumbled in with so many other threads of music that would now

never be disentangled and set to rights . . . and when he was gone, there would be nothing.

"Perhaps to-morrow," said Luac blandly, "you will give our anthropologist the answers to some of his questions. I know he is anxious to talk to you more fully."

Clifton nodded vaguely.

And all that was left of his civilisation's great heritage was a dying theme that rocked gently, insistently, through his tired, tired mind.

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Write a science fiction story of any length up to five thousand words. If it is accepted for publication in this magazine you may choose ANY SIX Panther Book titles from past advertisements. This prize of half a dozen BOUND books will help you start a library or will be a fine addition to the one you already have. Get out your pens!

He tried to get some sleep—and got something else again!

INSOMNIA CURE

by E. EVERETT EVANS

"THAT was a fine piece of work you did on the Dancey case," the director of the National Police said to his North Country aide. "Now, what's this about that young chap . . . Bafer, you said his name was? . . . that you suggest we take into the organisation?"

"He's really the one responsible for our success in breaking up that bunch," Harbert said. "His is a funny yarn, so nearly unbelievable I brought him along so you could test his abilities."

"What sort of things can he do?"

"Look, chief, I know you'll think I'm barmy, but it's all truth, as you'll find out in time. However, let me tell you about Bafer as best I can before you do any judging at all. Then I'll bring him in, if you're willing, and let you talk to him yourself."

"All right, but make it brief—I'm busy."

"Well, it started something like this."

Carleton Bafer (Harbert said) is as much the product of his own imagination as any man ever was. He says of himself that he was a screwy kid, always too tall for his age, too skinny and undeveloped to compete physically with other boys in their games. So he turned to reading books before he was six.

And such books. Fairy tales and myths soon palled—he wanted stronger meat. So he hunted through the little library in his home village and devoured all the more adult types of weird and fantastic literature; books about worlds of "once was—perhaps," and "may be—some day," anything away from the ordinary and tame.

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Bafer told me he has never forgotten the thrill of that wonder day when, still a boy, he read "What man can imagine, man can do." He says it became his philosophy of life, his motivating force, his credo.

And it came true in many ways. For as he grew he imagined, he dreamed, wished, willed and worked to become a writer of those fantastic type of stories he liked. By the time he was twenty he was beginning to have some real successes along those lines.

If only he could get rid of that damnable insomnia of his, he often wailed, he could be totally happy. But his over-active mind would not let him settle down to sleep when he needed it so much. Instead, he would usually get a new idea for one of his stories, and lie awake for hours working out every littlest detail in his mind, when he should have gone to sleep and worked on the story the next day.

He tried every treatment and method he ever heard that would cure insomnia.

But nothing worked worth a darn. It kept on getting worse and worse. He would be typing away, and suddenly wake up, head down on his arms on his typer, having fallen asleep while trying to work. But even those naps, seldom more than a few minutes long, could not make up for his lack of sleep. His health steadily grew worse.

Then one day he read that a good, sure way was to imagine yourself standing beside your bed, looking down at yourself as you lay there asleep. It was a sure-fire method, the article writer said. You merely saw yourself just as you actually were at the moment; every feature clear and distinct, your position, whether straight or curled up, your head on the pillow with eyes closed easily or squinted tight, mouth open or shut as it might be, covers tight around your neck or down a bit with your arms out . . .

Yes, yes, I know I'm taking a long time, but you've got to get this background to see what sort of a fellow he really is. Well, to get on—this

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method sounded sensible to him. That night when he got to bed he tried to visualise himself lying there in bed.

He tried it . . . and bounced.

Yes, he found himself with an even greater, apparently more insoluble problem. For, to his surprise and disgust, he could not do it. He simply could not see himself standing off and looking back at himself. He could not picture looking in the opposite direction from that in which he, and his eyes, were facing.

Night after night he tried it—he does have tenacity and stick-to-it-iveness. But he could not look back at himself. Weeks lengthened into months, and the longer and harder Bafer tried the angrier he got, for to run up against a problem he couldn't lick disturbed him more than he cared to admit, even to himself. You'll find he's a stubborn devil—which isn't too bad in this business, as you've so often told me.

"I can imagine it, I can do it," he'd mutter to himself—and try again. And again.

And again. But still no results.

Night after night . . . this was becoming ridiculous. "Look, stupid," he raged at himself. "The man says 'do this' in such a calm, simple way that it's clearly an ordinary little thing anyone can do. Now, am I going to lie here like a scared rabbit and tell myself I'm too damned dumb to do it, too? Hell, I'll do it if it kills me."

An insomnia cure? It lost him far more sleep than his insomnia ever did!

All right, I'm nearly down to the important part. It took nearly two years—that's how tenacious the chap is once he gets started after something. Then, the perfect visualisation he achieved that first night of success was a tremendous shock. And this you'll find hard to believe, chief, but remember I said he would give you proof if you'll interview him.

For on that night he not merely visualised himself as lying there in bed—he actually *saw* himself.

"Direct perception," he yelped in amazement. "My

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gosh, I've really got it," he whispered in awe.

Lying there in his pitch-black room, all thought of sleep now forgotten, thoughts jet-propelled themselves through his mind as to just what such a gift would mean to him. He sprang from bed, and found he could still use that perceptive sense; that he didn't need light in order to see his way around clearly.

He picked up a book, opened it and found he could read it there in the dark just as easily as he could with his eyes in the light. He shut the book, and could still read each page. Then he concentrated more deeply, and saw the miniature solar systems that comprise the molecules and atoms of the paper and ink themselves.

His excitement grew in kangaroo jumps. He would try something really tricky. Sitting down at his desk, he concentrated on a deck of playing cards in the bottom drawer, left there by a former room-mate. Swiftly he wrote down the order of the cards as he saw them. When he had

gone completely through the deck, he switched on the light, so that he might be sure he was using only his eyes. He got out the cards and checked them with his list.

Every single one right!

This was really something. He ran about the room, lustily crying his joy, forgetting it was away after midnight, reminded only when the man in the next room pounded on the wall for quiet. Then Bafer slipped back into bed.

His active mind went into high. What he couldn't do now. He would take up gambling in a really big way—being able to see all his opponents' cards would make it so easy to bet only on winning hands. Only, he grimaced ruefully after a moment, he didn't know how to play cards.

That sobered him a bit. Maybe this wasn't going to be so easy after all. "I'm not scientifically minded," he thought. "Even if I were to study biology or something like that for years, I'd still not be able to use my ability to perceptualise molecules, atoms and their component parts in

any effectual manner. Just have no aptitude of that sort. And no money to live on while I was doing all that studying."

Where did this leave him, then? Try as he might, he could not, just then, think of any way of using this new, wonderful ability to make money. But he certainly didn't get—or was given—this talent just to put himself to sleep, he thought, perplexed. Yet that was what he was working toward. Oh, well, he'd see if it worked.

It did, almost instantly . . . or perhaps Nature just got tired of keeping him awake, and put him to sleep so She could rest a bit.

WHEN he finally awoke the next morning he looked at his clock. After ten? What on earth had made him over-sleep like this? He yawned and stretched delightedly. Who cared what time it was? He really felt rested and swell this morning.

Then it hit him. Memory of the thing he had discovered

—or dreamed?—the night before.

Was it a dream? He glanced across the room at his bookcase. He shut his eyes and directed his mind to the third book on the top shelf. Yes, he could clearly read the title, the author's and publishers' names on the spine, with that new inner sense. He concentrated more closely, and found he could read the *inside* of the book—could read page after page as clearly as though it was opened in front of him.

It was really, actually, incredibly true. "I imagined it, I did it," he yelled as he showered, dressed and ate. Over and over he had to keep telling himself.

Then he sat down in his easy chair to do some serious thinking and planning. There *must* be some way in which he could use this for the honest making of a living. Else why have this wonderful sense anyone else would give everything to possess?

He experimented to find

out the limits, if there were any, of this new-found power. He would take a little trip downtown, he thought, while still sitting here in his chair. At once, mentally, he started out, seeing the hall outside his room, down the stairs, out the door, down the street . . . farther, farther, until he was many streets away, yet no sense of strain, no diminution in the clearness of his perception. He could see all the little, minute details of the street, the people, the shop window displays, as clearly as though he was actually walking there. In fact, more clearly, for he was noticing details he had never before consciously seen.

When his perceptual vision came to a cinema, an impulse sent him inside. He could see the picture all right, and grinned, but quickly realised something was wrong. Then he got it—he couldn't hear a thing. No words, no music, no sound effects, just the picture to be seen. "Pfui," he grumbled, "worse than the old

silents, for they at least had sub-titles. Either I'll have to learn lip-reading or else continue to pay my way when I want to see a show."

It was now apparent, though, that these small distances meant nothing. He would try something farther. He had been in Liverpool; he would go there again. He did, without any trouble.

He had a friend there, another writer. He knew where the house was located by address, but not where it was in the town. But a bit of thought showed him how to lick that. He sent his mind into the library and looked at a large map of the town, found where the street was. His sense of perception, which he was really learning how to use, soon had him inside his friend's house, watching him as he worked on a story.

Bafer grinned wolfishly, and went over to his own machine. Running in a sheet of paper, he quickly typed off the words that his friend was

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putting on paper in his distant home, including the page number, and a couple of mistakes in typing the other had made. Just that, no word of explanation, except a pencilled notation of the date and exact time of day, and his own name. Then he addressed an envelope and sealed the page into it. "Bob'll have a fit when he sees this," he chuckled. "He'll wonder and wonder how the heck I got it."

All day he sat there, extending his range farther into the distance. He visited the Continent, South America, Asia, the Americas. He looked into museums, and read books in libraries thousands of miles away.

It became almost more than he could take. He finally began to grow frightened. His whole body was drenched with sweat, his muscles trembled, his nerves screamed.

"Steady, boy, don't let this throw you." He finally jerked himself up sharply before he went completely out of con-

trol. "I know it's big, but you got it, now calm down."

Getting up, he warmed himself some milk and drank it slowly, thoughtfully. He still had not figured out how to make any money, and what was the use of this if he couldn't make a living out of it? That would be the height of stupidity, he mourned, and resumed studying the problem.

Somewhere along the line a thought strayed into his mind, but he kicked it out, angrily. "I'm certainly not going to stoop to blackmail," he stormed.

The coming of darkness did not diminish his ability to perceive, but it did bring to mind the fact that he had promised to go to the home of friends for the evening; that it was nearing time to be going. He rose, stiff from long sitting; ate something, and dressed to go.

It was fun walking along the darkening streets, able to see so clearly things ordinarily not seen at night. That

cat, slinking down the alley there, for instance. Oh, oh, kitty, better come back. There's a dog waiting for you just around the corner of that shed.

He passed the house where lived a certain girl he had seen many times and admired greatly, but whom he had never found a way to meet. He glanced up towards a lighted room, wondering if it was her's. He let his sense of perception enter through the wall . . . instantly jerked it back, feeling himself blushing violently. The young lady was undressing, preparatory to taking a bath. Bafer almost ran the rest of the way to his friends' home.

The party that night soon tended toward games and "stunts," as was the general custom of this gay, congenial group. Bafer had never been very good at such things, but tonight, he grinned, he'd really show them something—especially one fellow named Dancey. This chap, whom

Bafer had always somewhat envied, was really clever.

Sure enough, to his newfound sense, the card tricks Dancey performed were perfectly clear—Bafer could follow every move now. He kept up a running monologue of explanation to those close to him all during Dancey's tricks, to the latter's growing exasperation.

It finally got the man's goat. "All right, mister wise one," he snarled. "You're so clever, let's see you do something better."

Most of the group grinned, knowing what a dub Bafer usually was at tricks of any kind, how he always shied away from even trying.

But, to their surprise, Bafer rose and stepped forward and took the deck of cards from Dancey's hands.

"I want someone to blindfold me tightly," he announced. "Not just a handkerchief over my eyes—make some little cloth pads for each eye, then tape them with adhesive so all of you can be

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positive that I can't even see light through them."

There was a scurry of activity, while different ones got the necessary materials. Soon all there agreed that no one could possibly see anything with their eyes as tightly padded and taped as Bafer's were. He got them laughing by apparently stumbling around and swaying as though he was confused by this absence of light.

"First," he said after a bit, "I'm going to pass around the circle of you, with this deck of cards on my outstretched palm. I want each one of you to cut the deck, and I'll tell you the exposed card."

He did this without a miss or hesitation, to their growing amazement. Even Dancey looked somewhat surprised; he'd never given this shy young man credit for such cleverness. Yet openly he sneered. "That's not too hard. Thought you were going to show us something really good."

There were loud murmurs

of dissent, but Bafer, now thoroughly enjoying himself, turned to him and grinned. "All right, how's this one?"

But he suddenly felt very cold and frozen inside. Just for an instant he had really *looked* at Dancey, and what he saw almost threw him out of control. He jerked his attention away, and concentrated on his trick.

He turned back to the rest of the group and pointed. "Miss Stevens, will you please choose a number between one and twenty?"

"Nine," she said promptly. He pointed again. "Miss Voorheis, will you please name one between one and four?"

"Two," she said.

He pointed a third time. "Miss Jamieson, one between one and three hundred, please?"

"Two hundred and thirty-one," she gasped, then added to the group, "did you notice that he pointed exactly at each of us girls as he called us by name?"

"That's right, it was just dawning on me," Miss Voorheis spoke up, and there was a chorus of excitement about this.

Bafer stopped them by holding up his hand. "I could have remembered where you were sitting," he said. "Now, will someone go to the bookcase there, and pick out the *ninth* book on the *second* shelf and turn to page *two thirty-one*—the three numbers picked out by the young ladies."

One of the men closest to the case did so, but as he was opening the book Bafer stopped him. "I'm sorry, we'll have to have another page number, Miss Jamieson. Page two thirty-one is an illustration, and I want a page with words on it."

She suggested two thirty-three, and there was a greater hum of excitement when the man with the book stated that Bafer was right: there was a picture on two thirty-one.

Then, as the ones closest to the man looked over his

shoulder, Bafer recited the wording on the designated page. Then he turned to where Dancey was standing, being careful not to look too directly at him.

"Does that one satisfy you?" he grinned. He'd suffered somewhat from the snide remarks and jibes of this character; now he was enjoying his little triumph to the utmost. Dancey tried to make some sort of a disparaging remark, but was drowned out by the flood of sincere applause which the mystified group was giving Bafer.

One of the men asked: "What else can you do along those lines?"

Bafer looked thoughtful for a moment, then asked: "Shall I tell what you have in each pocket? Let's start with the upper left-hand waistcoat pocket. I see two El Ropo cigars, a card of an insurance solicitor by the name of C. S. Gray, of the Centropolitan Life Insurance Company, and a receipt for

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five and six, from the Grand Clothiers, for a shirt. Right?"

The man swiftly inventoried the pocket and confirmed him. He blushed a bit, however, when Bafer grinned and said: "Let's skip the little book in your inside coat pocket, eh?"

Then Bafer continued enumerating the contents of each of the fellow's pockets, naming each article, giving the numbers of the bills in his wallet, the dates on the coins.

The entire group was silent now, stunned by this display of ability in one they'd always thought of merely as "a nice guy, but shy," or "a sort of dope, but likeable."

As Bafer removed the bandages from his eyes and went across the room to get a drink of punch, one of the men whom he knew but slightly followed him and tapped him on the shoulder at a point in the room where they were momentarily out of ear-shot of the others.

"I want to talk to you after

this is all over," he said. "Please let me know when you're ready to leave, and I'll walk along with you."

Bafer looked up, startled. There was a hardness and a mysteriousness in the man's character that baffled and somewhat frightened him.

"**A**RE you sure it's perfectly legal and everything?" Bafer asked as he and this man were walking down the street after the party had ended.

"Of course it is—if you can really do it. And you'll be doing a big favour for your country, as well as for me personally. I'm supposed to crack this nut, but I can't even bowl a wicket. If you can do what you say you can, it'll be what I need."

"Oh, I can do it all right. I'm not worried about that. But it seems sort of like prying in forbidden places."

The man stopped and took a little leather-covered case from his pocket. "Can you see inside this?"

Bafer looked, and gasped at sight of those credentials. "A . . . a member of the . . . the National Police."

"Satisfied?" the other grinned, putting the case back in his pocket.

Bafer gulped and nodded wordlessly.

"You can tell almost at first glance if it's what we're looking for." The agent explained in detail what the thing was.

"Well, all right, I'll try it."

They came to a park, and found a bench in a secluded section. As they were sitting down the agent said: "I imagine it will be in a wall-safe somewhere in there, and I rather suspect it's behind that seascape painting you'll see in the third office on the right."

Bafer sent his sense of perception roaming into one of the great buildings across the square, and up to the fourth floor. He soon found the wall-safe in the indicated place. To look inside it was a simple task to his maturing ability,

and he found it filled with papers and books. For nearly an hour he studied them, but could not find what he was seeking.

He barely noticed, while doing this, that someone had approached their bench, and that his companion had risen and intercepted this intruder. That, after some soft-spoken words, there had been a slight scuffle, and the third man had run away. He wondered briefly, but was concentrating so hard that it really did not register, else he would probably have been frightened.

He was looking through the rest of the offices now, and on and in the various desks and files. After nearly another half-hour he suddenly laughed.

"What is it?" his companion asked quickly.

"The Purloined Letter' gag," Bafer explained. "The book wasn't in that safe, so I looked elsewhere. It's lying right out on top of a desk—the larger one in that fifth small office. It's bound just

like their library of law books, and is the third one in a pile of five. Very clever."

"You're sure it's what we want?"

"Yes, it's just as you described."

"Thanks. Now I want you to come and meet our district chief. He'll be very interested in those trick eyes of yours."

And the district superintendent, which was me, chief, was certainly interested once I was able to convince myself that this Bafer really had such an almost-unbelievable ability.

To shorten this lengthy yarn, we finally convinced Bafer that he could be of real help to his country by working with us, and that we could pay him even more than he had been making—though I didn't tell him it was less than our regular agents get. But I could tell that Bafer was thrilled to think he had found a way to make this unusual

gift of his useful and at the same time provide him with a living.

We set him to work helping us uncover clues and evidence on some of our worst cases—smuggling, tax evasions, and so on, and he soon proved a tremendous help. That's why our record of solved cases suddenly jumped so much these last few weeks.

About a month ago we asked him to search a certain building that was thought to house a counterfeiting ring. He "tailed" some suspects for us for two days and nights—while lying most of the time on a couch in my office. Now we were certain we had the right bunch.

We took Bafer with us when we surrounded the house, to give me minute-by-minute details of conditions in and around the place, where the various men in it were, and what they were doing.

"Just like shooting chained

bears in a cage," one of our men growled on the way back after we had caught most of the gang, and had loaded all the plates, spurious money and equipment into a Government truck. "Everything cut and dried, no excitement, just hard work."

"Yeah," I grunted. "Much better when we lose a man or two, and maybe they have a chance to destroy the evidence while we're chopping our way in."

Simmons grinned, then, and kept quiet.

BUT one day Bafer didn't show up at my office, nor could he be found at home, or anywhere my agents searched.

Three days later a local policeman out in the outskirts found him, bloody and dishevelled, but still alive and not too badly hurt.

After the doctor had patched him up, and he had eaten some food, he lay on the couch in my office, while

we all gathered around him, and told us his story.

"A couple of men grabbed me as I was going home Tuesday night, after being at the cinema. They slapped pieces of adhesive over my eyes and mouth, hustled me into a car, and drove off. I couldn't do a thing against such husky fellows—I'm not much of a fighter.

"They held me down on the car floor so that I couldn't tell where we were going—they thought—and the car turned a lot of corners. Naturally I knew where we were all the time—they don't know about my sense of perception. Finally they stopped and made me climb to a second-storey room, where they locked me in with another man as a guard. They said if I behaved myself I wouldn't be hurt—much."

There was a bed there, so Bafer lay down and got a good night's sleep. For his insomnia cure worked so well that even in situations as dan-

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gerous and unusual as the one he was then in, he could go right to sleep within minutes any time he wanted to do so.

Another man was on guard when he awoke in the morning—he found they changed guards every six hours. They brought him a quart of milk for breakfast, but no lunch. Late that evening two men came in, bringing some sandwiches and coffee.

"I got a real jolt when I saw them, for one of the men was this fellow Dancey, who used to come to those parties to which I used to go. He asked me a lot of questions about how you chaps found out about that counterfeit gang and some of those tax evaders, and what I was doing, working with you. They seemed to think someone in their mob had squealed on them, and from hints they let fall I gather they suspect a fellow they called 'Smokey' Garrond. You might check on him."

I gave one of our agents the nod, and he ran from the room.

"I guess they were slightly peeved when I couldn't—or wouldn't, as Dancey claimed—give them any information, because he slapped me around quite a bit. But it didn't do them any good, and finally they left, and I got another good night's sleep."

The next day had been the same, except that there was nothing for him to eat or drink at all. In the evening Dancey and his partner came back. There were more questions, no answers, and a much harder slapping around. "I was getting plenty sore," Bafer grinned, "and that's no pun, either."

I gave him a cigarette, and told him to take his time, but he went on with his story.

"I had been looking around both days, and found that there's a false cellar to that house—it's at the corner of Wilmerding Street and Wentworth Road, northeast corner.

There's a regular business office down in the sub-cellar. Half-a-dozen big steel files filled with records. This Dancey gang has a hand in dozens of rackets reaching all over the world. They even get pay from a certain country for doing a lot of dirty jobs for them."

"Can we crack 'em?" I asked, while the other agents crowded closer.

"Sure, I can give you enough dope to hang the whole gang. We can pick a time when they're separated and won't be able to help each other, or destroy evidence."

"Man, I wish we had a dozen with that sense of perception of yours. We'd really clean up this country . . . but how'd you get away from them?"

"Well, I began to figure I ought to be able to do something with my perceptive powers. I was lying down, but keeping track of my guard, even though my back

was turned to him. I noticed that when I seemed to be asleep he would relax a bit, tip his chair back against the wall, and take a smoke."

But that had not helped much, for the mobster kept his gun in his hand all the time. And Bafer said he wasn't ashamed to admit he was afraid of a gun.

He was quite sure that Dancey's patience would run out soon. Besides, Bafer wanted to get the information about that sub-cellar back to us. So he got down to some serious thinking.

"I noticed there were two sets of electric wires inside the walls. I traced them and found one was for the lights but the other was for electric door-locks and other alarms they had installed in the house, cellars and about the grounds. There was one place where both sets of wires were close together behind a thin piece of wall-board, under the wall-paper. I figured I could break through that thin wall with my fist."

He had staged a little act then. He groaned, rolled over, and started cursing, punctuating his remarks by pounding his fist on the bed. Got up, still yammering, still pounding his fist against the bedpost, the table, and so on.

The guard just grinned, but kept his gun trained on Bafer all the time. Bafer prowled about the room, still spouting off about being held prisoner, about not being fed, about the beatings he had been given. He still pounded his fist against whatever was handy, until he got to that spot in the wall.

"Suddenly I hit that wall as hard as I could. My fist went through the thin board, and I grabbed the two sets of wires and yanked as I pulled my hand out. They broke, and I touched the two live ends, short-circuiting both systems."

"Nice going," one of the agents said, and Bafer grinned at us.

"When the lights went out I ducked, wheeled and jumped as fast and as quietly as I could to one side. I was watching the guard, who looked startled for a moment, then fired at where I had been. Only I wasn't there. I managed to reach the door, open it softly, and creep out, while he was still hunting me and firing his gun occasionally. I sneaked down the stairs and out the front door—you see, no alarms or locks were working now."

One of the gang about the place saw him leaving, and there was a chase, but Bafer eluded them until he saw the constable and was safe.

WE rounded up the gang all right, without too much trouble, except in getting this fellow Dancey. When we finally got him to the station the next day—thanks to Bafer's help in finding him—Bafer gave us further directions, and we went to work on him.

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He was wearing some sort of a plastic frame to make him look presentable—which he wasn't. Ugh! I shudder every time I think of his actual looks. He had been in a fire, and what was left of him was a mess.

"Anyway, chief, that's why I brought Bafer down to see you. I know it all sounds weird, and it is, but it's also true."

"Hmmm." The director of the National Police still looked sceptical, but there was doubt in his eyes. "I can't quite figure out whether you're 'ribbing me' or not . . . but I never knew you to lie. Bring him in, and let me talk to him. So he found a way to cure his insomnia, eh? I have it pretty bad myself. How did you say he does it—close your eyes and try to visualise yourself . . .?"

It Takes Two

is the enticing title of a fine new novel length story by H. Ken Bulmer that will lead off next month's menu of literary delight. Another Tubb story appears with several other high quality shorts. All the usual features help to bring you 1s. 6d. worth of reading pleasure.



AUTHENTIC — A MONTHLY MUST!

Reviews of recent FANZINES

by THE EDITOR

BEM is published by Tom White, of 3, Vine Street, Cutler Heights, Bradford, Yorks., and Mal Ashworth, of 40, Makin Street in the same town and county. They hope to bring out about four issues a year, costing 1s. 6d. for two issues (or one U.S. prozine). The first issue to hand has 22 pages of nicely-duplicated and illustrated pieces. Walter Willis writes about Big Name Fans and Vincent Clark deals with the early history of the London Circle. These are the two best pieces, but the others are quite readable, too. Personally, I'd like few less puns, but that applies to most fanzines, not just BEM.

SATELLITE is edited and published by Don Allen at 3, Arkle Street, Gateshead 8, Co. Durham. It's fairly new (first issue in April), costs 1s. a copy (and is well worth the price) and comes out monthly (God *et al* willing). I've a penchant for SATELLITE, for it was Don's letter in *Authentic* that provided the spur to the formation of the North-East SF Society, of which SATELLITE is the organ. Everybody buy it, please!

VAMP is edited by John Magnus and costs "a buck for a subscription or a dime an issue." Something funny has been happening about the address, but your best bet is to write to John at Federal 203-B Cherlin, Ohio, U.S.A., marking the envelope "Please forward." Maybe it'll get there. VAMP contains verses and articles with a strong American slant, but interesting all the same. There's a long account of the Philadelphia Convention which is notable for its absence of humour. I found the Con rather funny.

FANTASTIC WORLDS, in its spring number, is as beautifully produced as ever, and contains its usual large quantity of high quality material. Edited by Sam Sackett, it must be among the cream of all fanzines. It costs 30c. a time, which is about 2s. 6d. in sterling, though Sam may have cut rates for "limeys." Sam lives at 1428½ S. Bundy Drive, Los Angeles 25, California, U.S.A. (One day I'm going to ask him who lives in the other half.)

DIMENSIONS is pub-

lished quarterly from 41, East 17th Avenue, Columbus 1, Ohio, U.S.A., and costs 20c. a copy or \$1.00 a year. This is Harlan Ellison's new fanzine, and is fully up to the standard of his earlier *Science Fantasy Bulletin*—indeed, it's probably better. The material is first-rate, both text and illustration, and there is plenty of it. A mammoth job for such a little fellow as Harlan, if he will forgive this personal reference. I remember seeing him striding about the Belle-Vue Stratford in Philadelphia, puffing an enormous pipe and exuding so much energy that everybody else felt tired. He spoke to me, too. One of my claims to fame.

ANDROMEDA is a sensible, sane, pretty but rather uninteresting fanzine. The spring issue contains some passable stories and articles, but the whole thing could do with a bit of livening up. To be mature doesn't mean that you have to be dull. Look at me. The price of 2s. (or 30c.) a copy seems a bit on the steep side and could probably be brought down by the same kind of business methods that could push the quality up. Edited by Peter Campbell

from 60, Calgarth Road, Windermere.

ALPHA, the bright, breezy, Belgian fanzine, keeps on coming out under excellent duplication and the level-headed editorship of Jan Jansen. It's a bi-monthly costing 4s. per annum—quite cheap. The latest issue to hand has 18 pages crammed with interesting stuff written in lively fashion. The whole thing is in English, and many of the contributors are English fans. More are needed urgently. Go to it, fen. Address: Jan Jansen, 229, Berchemiel, Borgerhout, Antwerp, Belgium.

THE NEW FUTURIAN has been resurrected by the Leeds fans after a break of eight years. They don't say how much it costs, but to find out you'd better write to J. Michael Rosenblum, 7, Grosvenor Park, Leeds 7. Maybe later issues of this fanzine will be worth having, but the first issue is spoilt by containing so much dribbling nostalgia that is out of place in so progressive a literary form as science fiction. True, the boys behind *The New Futurian* have been in the field since it began, almost. But the world turns, and if they don't turn with it they

join the frustrated ranks of the limbo lost. Gentlemen of Leeds: remember the second word in your title.

SPACE DIVERSIONS

No. 8 is to hand, and does nothing to make me change my mind about its being the best British fanzine. The cover is a masterpiece of scraperboard art that could grace many professional publications. The contents, too, would not be out of place in a good many prozines. In this issue is published the first part of the symposium on sex and sadism in science fiction that first saw light as an article in *Authentic* by John Christopher. I find only one fault with *SD* and that is the irregular lines. *SD* is put together by John Roles, Dave Gardner, Norman Shorrock and Donald Mackay. It costs 2s. 6d. for three issues (50c.) from Dave Gardner at 63, Island Road, Liverpool 19, and from Norman Shorrock, at 12a, Rumford Place, Liverpool 3.

SIDEREAL, in brief, is a new fanzine put out by the recently - formed West Country Group. It is edited by Eric Jones at 44, Barbridge Road, Hester's Way, Cheltenham, Glos. Eric seems to

write most of it, too, but that is probably because enough other people are not sending him material. It costs 9d. a copy (free to members of the group) and comes out whenever Eric has material on hand. You can join the Group for a subscription of 6s. if you live within 40 miles of Gloucester, or 3s. outside that radius.

HANDBOOK OF SCIENCE FICTION AND FANTASY

is a monumental work compiled by Donald H. Tuck, of 17, Audley Street, North Hobart, Tasmania. This massive book contains thousands of entries classified nicely according to story, author, magazine and pocket-book; it is complete up to January, 1954. A really first-class piece of work that is absolutely essential for all serious-minded fans. At the price of 10s. a copy it is extremely cheap. British fans should get it from Capt. K. F. Slater, 13 Gp., R.P.C., B.A.O.R. 42. U.S.A. and Canada fans should contact H. Devore, 16536 Evanston Street, Detroit 24, Michigan. Australians should get it from L. J. Harding, 510, Drummond Street, Carlton, Victoria N.3.

You wanted to run this magazine
so what do you think of this—

Science Fiction Story

by RICHARD WILSON

THEY took off for Mars in a spirit of faith and high adventure, yet with an appreciation of the dangers of their voyage and a well-concealed fear that they might not survive them.

There was Strong, the pilot of the spacecraft, his face grim as he sat at the controls, regulating the bursts of rocket power; One-Eye, the astro-gator, with a score of mechanical eyes to help him chart the course; Young, the gunner, only a year out of ordnance school, masking his pride at being chosen under a coating of sarcastic assurance; and Wise, the psychologist, whose many years had almost kept him at home, but whose unrivalled knowledge of human nature and whose record of

vast research into its predictability finally won over the sceptics.

They had no way of knowing, of course, whether the Martians would be human, and capable of reason. If they were not, then obviously Gunner Young would be the more useful of the two.

The early stages of the voyage went remarkably well. In an instant of drug-lulled acceleration pains they were beyond Earth's atmosphere and were being propelled toward the target planet with ever-increasing speed.

Then the days of monotony began, and they watched them pass each according to his own individual nature. Young tested his guns; once he opened fire on a meteor

streaking toward the ship. He scored a direct hit on the almost impossibly tiny target at a fantastic distance. For once, after this feat, he did not boast; instead, he praised the weapons with which he had been provided, and the training he had had with them.

One-Eye had more than mere astrogration to occupy him. Once beyond the atmosphere and in the lap of empty space, he had the fascinating responsibility of making new starmaps, from angles never before possible. But he also had the frustration of the man who cannot possibly do all that he would like to do.

Pilot Strong and Psychologist Wise had the least to occupy them of anyone. The two speculated together for hours about the kind of conditions which awaited them on Mars and about how they would cope with them when the time came. At other times Wise would make his

ancient body comfortable at a viewport and gaze back toward Earth, now diminished to a speck and barely distinguishable from the stars. And Strong would sleep, repaying his body for the excessive hours of wakefulness that had marked his preparations for the historic flight.

And, being deeply religious, he would also pray.

At length, exactly as had been estimated, they were at Point X, and it was time to be busy again. Half a million miles from Mars they flew now, and the planet's great satellite came into view, majestic in its frozen lifelessness. It had been decided to bypass this smaller sister-world, although some had argued for a landing there because of its safety as a vantage point from which to observe Mars itself.

("But," you said, "Mars has two satellites—two moons—Phobos and Deimos. And neither one could be called

'great'." You were told that you were perfectly correct, and were urged to read further.)

It was time to brake now, with the nose rockets, before the Martian atmosphere could envelop the spacecraft at its hurtling pace and consume it in fire.

Closer and closer came the huge planet. It had grown from a pinpoint to a glowing orb. But as they came near enough to observe details, these were hidden at the far side of the spacecraft's rocket blasts.

Then the ship was slowed sufficiently and it was in the atmosphere, which provided auxiliary brakes. The atmosphere was unexpectedly dense, and Strong, operating on judgment against a background of training, sent out the wings and fins from the sleek body of the craft. The rockets sputtered and were still. The long glide began.

The four of them gazed

down in amazement at the new world. It was unlike anything they had been taught that they might expect.

Great masses of vapour streaked past the viewports—multi-coloured in pastel tints finely painted by the sun. Below were thick clouds, solid for long periods of time, but with gaps in them now and again through which they saw a frightening expanse of leaping, angry matter which was an untamed greenish-black in colour.

In a bewildering instant the spacecraft broke through the clouds, and Strong had only a few seconds in which to fight the controls and avert a crash. The ship described a perilous arc which brought it within a second of destruction in the furiously lashing greenness. Up, up went the ship as Strong cut in the tail rockets, until it was just under the cloud layer. Then he straightened it and they flew on in a level cruise,

searching for a safe place to put down.

Strong kept the speed at the least possible to sustain flight, but even so the angry green below them raced past in a blur of shrouded detail.

The light was dying slowly and it became a matter of urgency to find a haven, short of a return to the safety of outer space, an alternative which would dangerously deplete their reserve fuel supply.

One-Eye, the astrogator, saw it first, far in the distance—a towering summit of land which leapt up from the angry green like a signal to them. Strong set his course for it and it solidified in their sight as a rocky peak, perpendicular to the surface for almost all of its height, but flattening at its base to a sandy plain.

The welcome sand encircled the lonely mountain jut in a wide band. Strong determined to make the try. He had to now, or head back

into space immediately—the sun was a great red orb low in the sky and was preparing to glide beneath the horizon.

One-Eye had made hurried calculations and he shouted commands to Strong. In effect, the astrogator was now flying the ship, using the pilot's hands as an extension of his mind.

There was a sickening dip as the spacecraft swooped low. At a fantastic pace it skimmed the green fury. Then there was brown sand below, and the sand-runners of the ship lowered into position. The great craft eased down . . . down . . . There was a lurch as the runners touched. The ship veered crazily for an instant, then responded to the desperate hands at the controls. It leapt into the air and landed again on the runners with a great shock. There was a series of smaller leaps, and then it was racing smoothly along.

The nose rockets braked it and the ship was at rest.

And just in time, for night had fallen. They voted to spend the first night aboard the craft and to begin their explorations with the new day.

They slept, except for the pilot, who remained awake as guard, and by the time the sun had begun its climb into the sky they had nourished themselves and donned their intricate safety suits. During the night, Strong had made tests of the atmosphere, and when they emerged they were protected in the necessary degree against the excessive heat, the high humidity, and the effects of the different gravity.

The sand onto which they stepped was damp, and they left tracks behind them as they walked cautiously away from their craft. The peak jutted fantastically high above their heads, but the great green mass which lay beyond the sand and which had been in such a fury the previous day was now calm

and more nearly blue in colour.

(Again you protested. "That's obviously water the author has been describing, but everyone knows there isn't any water on Mars. Why, even the so-called 'canals' don't—" You were interrupted and asked to bear with the story. "But," you argued, "that business about the 'excessive heat' and 'high humidity' . . ." You were told that you would see, if you would be patient.)

They moved slowly, ponderous in their suits. Gunner Young walked at the rear of the file, cradling the protective weapon in his arms and turning his head constantly.

They walked completely around the base of the peak. The flat sand surrounded it on all sides, hugging the sheer wall of rock. There was no way up the cliff, anywhere.

As they made the circuit, the sun rose higher and lost itself in the clouds, except that its brilliance was reflec-

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ted behind them in pastel shades which shimmered delicately from every quarter of the sky.

They returned to the spacecraft and to their own footprints, having found nothing alive, nothing moving except themselves and the clouds and the blue-green mass. Now Strong, the pilot, motioned the others to stay back and approached the mass, which was less than solid. Standing safely back from its edge, he pushed a probe-rod into it, to test its temperature.

The other three looked on in alarm as Strong began a struggle to retain possession of the rod. Something in the semi-solid mass had attached itself to it and was pulling. One-Eye thought he saw a long, flexing object wrestling at it. Strong was jerked a step closer to the edge. The other three rushed forward as he teetered dangerously on one leg. Then he let go, and the rod was whisked into the

blue-green stuff, to disappear. The shape One-Eye had seen vanished, too.

It left a track behind, one which lingered momentarily before it, too, disappeared.

But then, from that same direction, came a new wonder. A wall of (word untranslatable; "spray" or "mist" is suggested) materialised. It was as high as their ship and as broad as twenty men. It glinted like crystal in the sun's rays. And it came toward them, slowly but steadily.

The wall of (mist) now became translucent, instead of reflecting light, and within it they could discern shapes which were no more than blobs at first, but which became akin to the flexing object One-Eye had seen pull the probe-rod from Strong's hands.

There were more than a dozen of the shapes, and they undulated within the translucent wall, passing and re-

passing each other, rising from the bottom to the top and sinking again. As the wall grew closer to them still, they saw that it had considerable depth. It was a cube of (mist), and more shapes were behind those they had first seen.

Wise, the psychologist, voiced their thoughts when he pronounced the shapes human, or nearly so. They were men, of a kind, with heads - within - heads and legs that were long and extended into feet which were not normal feet, but which were wide, flat and highly flexible. They beat an intricate pattern in the (mist) and seemed to be the creatures' principal means of propulsion within their medium, although the arms, too, were in constant motion.

As the translucent cube came closer still, the Earthmen drew back toward their spacecraft. Gunner Young swung his weapon toward the approaching thing and rested

his thumb lightly on the activator.

So close was the cube now that the creatures within it could be clearly distinguished. Above the flexible feet the body was normal until the neck. There a transparent membrane formed a globe, and within this was a normal head. The face, seen not quite distinctly, appeared to have intelligence behind it.

Gunner Young was the first to notice that in the right hand of each of the ("swimmers" is suggested for the untranslatable word) was an object that might be a weapon. He tightened his grip on his own and looked toward Strong. The pilot shook his head.

The glittering cube halted at the sand's edge. The (swimmers) continued to mill around inside it. Some of them went from the cube into the mass of blue-green beneath, and others, or the same ones, came out of it into the cube.

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None ventured beyond the cube in any other direction, however, neither toward the men on the sand, nor up beyond its top nor out beyond its sides.

The pilot, Strong, weaponless, made the sign which, among us, means friendship. The (swimmers) were clustered at the front of the cube. They made way then for another of their number.

A woman.

She was a graceful, attractive creature, not immature, not old.

("A Martian mermaid!" you said. "For crying out loud!" But the next sentence was a teaser, and you read on.)

She was clad only in the (mist) in which she (swam). Her face was intelligent and strong without being hard. She answered the pilot's sign. She, too, was unarmed.

Then she spoke.

They both heard her voice, speaking a strange and (bubbling) tongue, and under-

stood her thoughts within their minds.

"Who are you that visit our land in your strange vehicle? We have watched your arrival and, if you come in peace, we welcome you."

"We come in peace," the pilot said. "We are from another planet, which we call Earth, on a mission of exploration. We greet you in the name of (God), the All-Powerful, the Jealous Ruler of all creatures on Earth and beyond."

It had been a well-intentioned speech.

But the face of the woman flushed. "I rule here," she said. "I and I alone, I the Mother-in-Child. None is more powerful. Your (God), she who sends emissaries to dispute my rule, is my enemy and her emissaries must die! What say you now?"

Wise, the psychologist, touched the pilot on the arm.

"Speak softly, my son," he advised. "Since we *do* come

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in peace, be less than proud on this alien soil."

But the pilot thrust off his hand. "I represent my faith as well as my people," he said. "They are indivisible and no pagan shall mock them."

To the woman he cried :

"I say this now—that my (God) is a just but a terrible (God), and He will have no others before Him. As His emissary, I can recognise your suzerainty no more than I can fly naked through space!"

The woman's face became distorted by fury and hate. "Then die!" she cried. "Die! Die!"

Gunner Young raised his weapon and fired. The blast hit the side of the (mist-) cube, spread and licked across its face like a flame. There was a monstrous hiss. The blast reversed itself and funneled back to Young. The gunner was torn apart.

Now the cube, with the

(swimmers) swarming angrily inside it, moved forward, over the sand on which the three still-living Earthmen stood. The (mist) enveloped them and as it did there was a maelstrom of kicking, gyrating humanity. The cube rose up into a pillar, then twisted and bent into a rising, spiraling thing which stretched as tall as the great peak. Within it the Mars creatures tore at the Earthmen and carried them up, up to the pinnacle of the lashing column.

The thing that had been a cube held this distorted shape for an instant, then reverted to a cube and darted swiftly to one side, to ride high in the air. The three men from Earth were let fall from the great height. They thudded onto the hard-packed sand, and died.

The cube was again at the edge of the sand. The woman who had called herself the Mother-in-Child looked impassively out at the still forms. She laughed, a terrible

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laugh. And then her face became serene.

The translucent cube sank slowly, merging into the blue-green calm until it was entirely gone.

YOU put the folder down.

"It's a weirdie, all right," you said.

You were asked what other comments you, as a typical science fiction reader, might have.

"I'm a little disappointed those Martians didn't get to use their water pistols. Oh, seriously? Well, I don't know. I just frankly don't get it."

You were told then that the story had been written by a Martian.

"Ohhh," you said. You thumbed through the pages again. "I see. A Martian wrote it from the viewpoint of an Earthman, is that it?"

No, you were told, he wrote it from the viewpoint

of a Martian. Only—oddly enough, to us—the Martians call their planet "Earth" and refer to Earth as "Mars."

"Now cut it out," you said. "That's too much to swallow."

Not at all, you were told, if you consider that "earth" means "soil, ground, land" to a Martian as much as it does to anyone else. And all names in the story were translated literally, even the names of the characters.

"Yes," you said, "but 'Mars'? You're not going to tell me the Martians named the third planet—ours—after the Roman god of war?"

No, not after the *Roman* god, you were told. But there is a god of war and destruction in Martian mythology. And the Martians had this warring, destroying planet under observation for a long time. Therefore what would be more natural than for them to attach the name of that god to the planet we know as Earth?

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"Okay, okay," you said, laughing. "And so you translated that name literally, too, and got 'Mars.' You win. But tell me where you got the story. I knew the message channels to Mars would be sending all sorts of crazy things back and forth once World Government opened them up to private enterprise. But what I mean is, was this story published in the Martian equivalent of a science fiction magazine?"

No, you were told. As a matter of fact, it was rejected by every Martian publication

because of the religious angle — too controversial. So the author — an eccentric old party with more money than brains — messaged it to Earth . . .

"What?" you said. "At four bucks a word?"

That's right. Messaged it to Earth, addressed to this magazine.

"That's fantastic," you said. Then: "Well, are you going to publish it?"

That, you were told, was up to you to judge, as a typical science fiction reader.

Do you think we should?

ALL ABOUT SEPTEMBER

Zodiac signs: Virgin and Balance. Seventh month of pre-Julian (Roman) Calendar. Fire of London (1666) started on Sept. 2nd. World War II started on Sept. 3rd. Bernard Darwin born Sept. 6th, 1869. Dr. Johnson born Sept. 18th, 1709. Greta Garbo born Sept. 18th, 1905. Faraday born Sept. 22nd, 1791.

First in a new series on—

THE WAYS OF SCIENCE

by FRANK WILSON, B.Sc.

Science is above all a method. True, the method tends in the main to be applied to rather off-the-map subjects, but it is not the abstruseness of its subject matter that makes science what it is. What characterises science is the methods it uses to attain its ends.

Before going on to examine these methods, it will be as well to take a look at these "ends" and try to answer the questions: What is science doing? What is its purpose? What is the scientist searching for, fundamentally?

These questions cannot be answered simply, directly and precisely. Science is something that has been growing and developing for several hundred years; it is multifaceted, complex. Looking at science is rather like looking at a human being who is senile in places, mature in others and still developing in yet others! A plain description will not cover the width of the facts and the range of intention.

However, we can tackle the

problem by analysing it into its constituents, at which we will look separately—this, we shall see, is part of scientific method anyway! Now, take a single individual scientist working at the present day. What is he doing? He is carrying out research on some subject that interests him. This means that he spends his days—and a goodly part of his nights, too—reading the learned journals that deal with his subject, carrying out experiments to confirm or contradict the work of others in the field, and doing experiments that have occurred to him alone.

He is working on some very small part of Nature. What he is trying to find out is, in relation to the totality of known and unknown facts, infinitesimal. Well, knowledge starts with infinitesimal facts. We shall see later how these are made the basis for generalisations called "laws."

You can see now quite clearly that by describing what our single scientist is

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doing (say, tracing the chemical fate of protein in the animal body) we do not get very near to what scientists as a whole are doing; it does not give us much indication of what science is all about. Indeed, if all we had to go upon was a knowledge of this single scientist, we should probably never arrive at the present concept of "science." In a sense, "science" does not exist! It is a kind of imaginary summation of all the little pieces of scientific work going on all over the world. In another sense, of course, it does exist—if only as a conscious motivation on the part of scientific people, who know what is the general aim of scientists.

Scientists—and even here we should add the qualification, *experimental* scientists—on the whole, as a class of persons, are trying to discover all there is to discover about the *order* of Nature. Order is one of the fundamental quests of science. It is also one of the basic assumptions, or axioms. Axioms are ideas, statements, principles that are so fundamental as to be unprovable. They are known, or felt, by intuition alone. Naturally, intuition is not a

way of arriving at beliefs that commends itself to science, and because of their unprovability science tries to have as few as possible axioms. Nevertheless, it *has* to have some. Thus, one unproven, universally-accepted axiom is that Nature (by which is meant the universe and all that's in it) is an ordered system.

Starting from that axiom, and a few others that we shall come across later, science tries to establish the order of Nature in terms of human understanding; it tries to fit the events of Nature into a system that the human mind considers to be ordered.

In the course of a few centuries of scientific work it has become apparent that the order of Nature can best be examined by studying small parts of it, so to speak. In this way, natural philosophy (the old name for experimental science) became divided into chemistry, physics, botany, zoology and so on. And then chemistry, for example, was split up into organic chemistry, inorganic chemistry, physical chemistry, analytical chemistry, etc. Eventually organic chemistry underwent schisms into the

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separate "sciences" of carbohydrates, organometallics, alkaloids and so forth. The natural philosophers became *specialists* in the fields of decreasing range, and became more and more out of touch with the broad panorama of science.

Maybe we should repeat here the quip which gives the essence of the position: "A specialist is a scientist who learns more and more about less and less." This is true, but its extension: "Until he knows everything about nothing" is *not*! Once it was considered that no single man could possibly become acquainted with the whole of current knowledge in all fields of science. Nowadays it is considered impossible for a single man to know all about any single speciality!

This narrowing down of field of activity is a very important part of science as it is practised today. Once upon a time it was customary for a scientist to apply himself to a very wide range of phenomena. It is not surprising, therefore, that of all the many medieval natural philosophers only a few are noticed by history.

Natural philosophers of the

middle ages spread their talents over such a wide field that much of their energy, mental and physical, was uselessly dissipated. The few who achieved fame were more fortunate than brilliant—or, rather, there may well have been other more brilliant workers who are unnoticed by posterity because they did not happen to be working on something that yielded definitive results. Thus it is that few of the many scientists at work today will go down as hallowed names in history—because, though their work is valuable, it is not as fundamental or as general as that of others more fortunate. And so it was that only a few of the scientists of earlier times have their names enshrined in fame.

Whereas the conduct of science in the middle ages was such an individual affair that a man at least stood a chance of becoming great, nowadays the progress of science is so much an affair of teamwork that there is no chance at all of an individual becoming great by the discovery of a fundamental universal law. Such laws will be discovered, of course, but there'll be half a dozen or half a hundred

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legitimate claimants to its discovery. However, we have drifted into the personal field of the structure of science. Let us get back to the less controversial issues!

In the old days it sometimes happened that a scientist who worked in many fields came across a general law in one of them. But not very frequently, compared with the number of workers. Nowadays it is even less likely that a laboratory scientist will be able to formulate a law of wide generality. This is partly because a good many fundamental laws have already been formulated. But still the way is left open for improving upon these old laws, with the production of a law truer to Nature (in that it serves to explain more facts). Such good fortune has befallen some modern theoreticians, like Einstein and Maxwell. But by far the larger part of the current generations of scientists must rest content with providing the source material—new facts and laws of narrow scope—for the wider generalisations of the small band of theoreticians.

In a sense, this is the difference between science and technology, though we

are here stretching the meaning of those terms a little so that exaggeration will bring out the point at issue. Science takes its biggest leaps by *theory* that is built upon the factual findings of technology. The mere accumulation of facts is useless for advancing science, though essential for technological progress. It is the mental interpretation of facts that takes science, as a whole, forward.

Suffice it to say that science—applying that word to the whole complex of scientific people and their aims—seeks to make wider and wider generalisations of order until the ultimate generalisation is reached—that which explains the whole of the universe.

This, you may think, is a long introduction to an exposition of scientific method, but it is essential for a proper understanding of what that method really is. And we have not yet finished our introduction, for we have now to examine what is meant by “generalisation” and “explain.” Let us take the last first. In science, to explain a thing is to show its casual connection with known laws, and with previous knowledge. A thing is explained when it

is shown what causes it and how it fits into the current body of knowledge. All the time, science hopes to bring new phenomena under old laws, and old laws under new laws—the latter task being the special prerogative of the theoretician.

This, of course, will lead us in later articles to investigate exactly what is meant by "causal connection." And we shall have to get a much clearer idea of what cause is and how to determine it. For another of the basic axioms of science is that everything has a cause, though we shall also see that certain schools of modern philosophy are rejecting that axiom.

A generality is a statement or principle that, ideally, covers all cases. A generality arises out of a situation where it is observed that when *this* happens *that* happens, too. By suitable experiments it is shown that under such and such circumstances, when *this* happens *that always* happens because of this and thus a causal connection. To make a wider generality is to state

(after proof) a law which explains more things than the earlier, less general law.

Induction is the name applied to this kind of thing. In the last series of articles, we dealt with deduction; now we are going to investigate induction. This will show us the kinds of rules and principles that the practical scientist uses as a guide to the design of his experiments. Some people may think that scientists are born and not made. This may be partially true, but we shall see that scientists derive a considerable amount of help from induction—which is a subject that can be learned, though the degree to which it is made fruitful does seem to depend upon imponderable personal values.

Methodologists have succeeded in showing that there are certain principles which must be followed before anything can be called a fact. Seeing, we shall discover, is not by any means good enough evidence for believing!

*When next you try
a strange tobacco, remember—*

The Jar of Latakia

by EDMUND COOPER

MALLORY lifted the makeshift lid of the tankard and sniffed curiously. It was just an ordinary stoneware jar, the kind one used to buy full of mustard in pre-war Vienna. There was a crude, dark red bas-relief of St. Nikolaus on the side

But the tankard did not now contain mustard. A few stiff, dried flakes of what appeared to be tobacco lay at the bottom. It smelled like tobacco and it felt like tobacco—the kind of tobacco that might have been mislaid round about the turn of the century. There seemed to be a little less than half an ounce.

A confirmed pipe-smoker and *soi-disant* connoisseur of

tobacco, Mallory fingered the brittle flakes and held them close to his nose for a few moments.

“Latakia,” he pronounced audibly and confidently, feeling sure of his verdict.

At that point, there was a knock at the door. Mallory put the Latakia back into the tankard, which he returned to the oven of the disused kitchen range, where he had found it. Then he went to receive his visitor, and promptly forgot all about it.

John Mallory had occupied the country cottage for about a month. The fact that the previous owner—a Colonel Harrys—had hanged himself upon a convenient apple tree in the garden made the pur-

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chase of the cottage an easy matter. Mallory had offered a ridiculously low sum which had been promptly accepted.

It was rather larger than the usual Suffolk cottage, being in fact two reasonably-spacious Tudor "hat-boxes" which had been converted early in the nineteenth century. The result was a comfortable, if isolated, snuggerly which had appealed to Colonel Harrys, since it was near an extensive rough shoot that he customarily leased. He did not, however, enjoy his new-found convenience for long, because he was dead within three months of taking up residence.

For Mallory, the attraction of Rone House lay in its isolation. He wanted to get on with his work; and for that he needed solitude. City life might have its merits and consolations for the struggling artist; but for the successful one, as Mallory had found to his cost, it also had its limitations. One was expected

to entertain and be entertained. One was expected to scintillate in a miasma of rather vapid parties. One was expected to be gregarious and eccentric, and to use a studio largely for the cultivation of multiple and complex love affairs.

In such a world, John Mallory was out of character. Thirty-five years old and a bachelor with a reasonable income, he felt just a little vulnerable. And of late, his vulnerability had been tested by one or two aspiring women, single and otherwise. From these and from other distractions, he had fled to East Anglia and to Rone House. Now, at last, he was beginning to get down to solid work again. The north bedroom, with its two large dormer windows and white, studded walls, made a comfortable studio. Mallory did not regret the loss of rustling silk or taffeta and the bright red smiles. At Rone House he met only those human

beings it was necessary to meet — chiefly tradespeople. He lived alone and liked it.

One morning, shortly after breakfast, he took himself up to the studio to continue work on a rather ambitious portrait. It was the head and shoulders of a woman—the kind of woman John Mallory had never known. He needed no model, and was guided only by the fleeting but profound impressions that his waking mind managed to retain from a persistent, though damnably elusive, dream.

On this particular morning he was engaged in the delicate project of painting the eyes. Three times he had scraped the paint off the canvas with his palette knife. The light was good, his working conditions were excellent, but somehow the colours were muddy. Mallory gazed at his untidy palette with distaste. None of the pigments upon it possessed the quality he needed. The blues were dull

and lifeless; the greens stodgy and opaque. How then could he hope to achieve the transparent and luminous turquoise that would bring those vacant eyes to a mysterious, independent life?

He puffed furiously at his pipe, concentrating upon the insoluble problem. Presently he noticed that the pipe was cold. Muttering an irritable curse, he reached for his pouch, recalling as he did so that he had taken the last filling after breakfast. Mallory cursed freely, and stalked grimly downstairs in vain but hopeful search for an odd tin of tobacco.

After five minutes he gave it up, and bestowed eloquent if unreasonable maledictions on the village shop that was nearly two miles away.

It was then that Mallory remembered the jar of Latakia. He went into the kitchen and took it from the old kitchen range. Removing the lid, he stared at the dark, crisp shreds distastefully.

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"Poisonous stuff!" he muttered to himself. But at that particular point, Mallory was prepared to burn his throat out, if only he was allowed to solve the problem of the eyes.

So he prepared to brew a mug of tea as an antidote to the probable effects of smoking that dry and ancient tobacco.

Waiting for the kettle to boil, he idly mused upon this first and only relic of Colonel Harrys that remained in the cottage. He began to wonder why the Colonel—from all accounts a stock military type—should choose such a dramatic way of taking his life.

"Probably smoked too much of this damn tobacco!" he concluded uncharitably. Then, as steam came from the spout of the kettle, he considered the possibility that the Latakia might have been in Rone House long before Colonel Harrys came.

Back in the studio, Mallory

banished all such conjectures from his mind as he contemplated the canvas before him, occasionally sipping tea, and absently stuffing shreds of Latakia into his pipe.

Presently, the fragrance peculiar to such tobacco began to fill the studio, blue skeins of smoke wreathing leisurely across the still atmosphere.

Presently, Mallory found a more promising way of approaching his problem; and then, naturally, simply, inevitably, the means of solving it. He began to work quickly and silently.

Presently a pair of blue-green, slightly luminous eyes regarded him gravely from the enigmatic canvas . . .

The girl was sitting in the chair when Mallory awoke. She was staring at him gravely with the same blue-green eyes.

His heart lurched violently, and he glanced with a terrible effort of will at the canvas.

Nothing had changed. Here, then, was the original of the painting.

Mallory sat up suddenly on his camp-bed and gaped. The reality of the situation began to penetrate the sleepy mist that still shrouded his returning consciousness. More important than solving the mystery of how he came to be asleep on the camp-bed was this urgent, three-dimensional mystery of the girl.

"In God's name, who are you?" demanded Mallory, his voice sharp with a peculiar fear. He heard his own taut words break the silence, and was startled by their high urgency.

The unreasonable surge of fear drowned all his rationality, swept away all common-sense explanations or possibilities, as Mallory took in the details of her odd dress—the long, divided skirt gleaming like dull metal; the black translucent spider-web of blouse, offset by curious

brooches; the broad belt round her waist. Oddly enough, even as the scene burned itself indelibly in his mind, he registered the insignificant fact that the clock had stopped—at twenty-past eleven. Therefore he had been asleep for less than five minutes, or else slightly more than twenty-four hours.

From the sluggish stupidity of awakening, his thoughts had accelerated to break-neck speed, so that his mind was busy exploring all possibilities before the girl had answered his question.

Her voice, leisurely and musical, was like a cool sedative to Mallory's high fever of unreason.

"It is quite natural for you to be afraid," she said. "That is why I wanted you to awaken naturally—to lessen the shock. Please look into my eyes!"

It was neither a request nor a command, yet Mallory instantly acceded or obeyed; he was not sure which.

For a moment, the deep luminosity of her gaze seemed to darken the room, seemed to swallow him; and he felt drawn through opaque, swirling pools of darkness. Then everything was light again. But he no longer felt tense or afraid. Calmly and intelligently he awaited her explanation.

She smiled. "That feels better, doesn't it?"

He nodded. "Who are you?" he asked once again. But the terror had left his voice.

"First let me prepare you," she said in that odd, leisurely voice. "It would be better, I think, if you could accept this experience as a rather vivid dream—nothing more. You see, your mind is not attuned to face this particular actuality without suffering a great stress . . . Can you believe that you are dreaming?"

Once more he met the compelling darkness of her eyes.

"If you think it is necessary," he said calmly, "I will believe that I am dreaming." He nodded towards the canvas. "But, as you see, the dream has not entirely taken me by surprise."

She followed his glance, and her smile became almost mischievous. "Naturally, there would be a certain amount of subconscious preparation," she explained. "Your—your submerged self would anticipate this experience long before your conscious self was able to enter it."

Mallory, already accepting the dream-like quality of the situation, was beginning to react almost naturally.

"I'm not sure that I believe in predestination," he remarked casually, with a thinly-disguised scepticism. "Or even in clairvoyance."

She seemed to be amused. "You won't deny that there is a certain relation between cause and effect?"

Her amusement was infectious. "After all," thought

Mallory, "if this is a dream, then I'll have a damn good two-pennyworth. And if it isn't a dream, it's certainly highly diverting."

He shook his head in answer to her question. "Nevertheless, I do assert that there is such a thing as free will."

As if by chance, her gaze rested on Mallory's pipe, which lay on the floor. He noticed it—and remembered the Latakia—for the first time.

"Did that have anything to do with it?" he asked quickly.

The girl's eyes were laughing. "Perhaps," she said non-committally.

Mallory felt he was making a fool of himself.

Then suddenly she became serious. "The first thing you must accept," she said, "is that we exist in different kinds of time." She paused to let the full meaning of her words sink in.

There was a few seconds'

silence, during which Mallory became unaccountably cold. He stared at her, trying to comprehend the strange transition from a normal studio session to a tightrope walk between daydream and nightmare.

"You mean," he said hoarsely, "you belong to the past?" It was the first idea that came into his mind.

For a moment, the girl looked surprised. Then the latent power in her eyes seemed to reach out and hold him. "No, Mr. Mallory," she said quietly. "But I'm afraid you do!" He began to smile again. "You see," she added gently, yet with a curious compulsion, "I happen to know that you died nearly a hundred years ago!"

Looking out of the window, Mallory knew beyond doubt that what she had said was true.

Until twenty-past eleven—or, more accurately, until he had fallen asleep—the view

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from the studio window had been a panorama of fen and woodland. This was now replaced by the runway of a vast airfield; and in the distance was a cluster of strange, shiny hemispheres which—so the girl told him—were hangars. Mallory was inclined to believe her—especially as a vast aircraft, a streamlined, wingless fuselage, had just passed overhead with terrifying silence.

There were beads of moisture on his forehead, but his hands were ominously cold. It became vitally necessary to keep on talking; a pathetic attempt to assert his own existence. The girl standing by his side watched him with a curious, intimate detachment.

"But this is all nonsense!" he exploded. "It just isn't so! It's some kind of delusion. I—I——"

"It is so," she asserted simply, with a hint of compassion in her voice. "But for you, I agree, it is nonsense. It is outside your terms

of reference—just as your own world is beyond my experience."

"Look here," said Mallory harshly, "how the devil do you fit into this nightmare?"

The girl studied his tense expression. "I've already told you," she said patiently. "I am what you would call, I think, a psychiatric worker. It is my business to study certain peculiar experiences which, in your day, were supposed to be simple hallucinations."

"And I," said Mallory sardonically, "am therefore one of your guinea-pigs."

"Exactly. We have reason to believe that time, or history, or experience—call it what you will—is playing some rather strange tricks in this cottage. I am, so to speak, investigating the reputed hauntings." She smiled suddenly. "May I say that it is rather reassuring to find you a pleasant and altogether human ghost."

Mallory was not deceived by the lightness of her tone.

"There have been others?" he asked quickly.

She nodded. "One, at least. Perhaps more. You see, we were able to localise the disturbances only shortly before the appearance of our last visitor."

Mallory took a leap in the dark: "Colonel Harrys?"

"Did you know him?" countered the girl quickly.

Mallory laughed shortly. "He hanged himself. That's how I came to get the cottage."

"We know all about his death," she said. "Poor man, he was quite unable to stand the shock. You, on the other hand, are taking it much better."

"Which just goes to show that psychiatry hasn't advanced a great deal," he remarked dryly.

"Possibly not. But telepathy has. You must remember, Mr. Mallory, that unless you choose to shut me out, I can witness most of your thoughts."

Mallory stared at her.

"It's no use trying to shock me," she said imperturbably.

"It is perfectly natural of you to think of me as a woman, and to use your imagination to satisfy your curiosity. I accept the compliment in the spirit in which it is given."

He detected a slight glitter in her eyes, and was suddenly pleased. "People must be pretty uninhibited in this brave new world," he remarked with a thin smile.

"They need to be," said the girl evenly.

The clock was still at eleven-twenty; the portrait was still on the easel; the air-field was still visible through the window; and the girl had not yet disappeared.

Mallory had recovered himself sufficiently to offer her some tea, and he went to the kitchen for an extra cup and saucer. There he discovered the kettle still puffing steam through its spout, though he remembered turning the gas out before, as he noted grimly, he had

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turned into a ghost. He began to have his own idea of the kind of dimension in which he now found himself.

On his return to the studio, he watched the girl sip her cup of tea with intense curiosity.

"Tell me," he said suddenly, "did I fall, or was I pushed?"

The girl regarded him thoughtfully. "I imagine you pushed yourself, Mr. Mallory. We—of the present time, or your future—certainly had no hand in it, if that is what you think."

Mallory was silent for a moment or two. Then he said: "I expect Colonel Harrys was a pipe-smoker, too."

The girl seemed to be puzzled. "Does that have any bearing?" Then she added: "I see you are thinking about some peculiar tobacco you smoked this morning."

Mallory laughed. "A jar of Latakia. A few harmless shreds of Latakia. A Viennese

mustard-pot stuffed away idly in an old kitchen range. You people of the future seem to be good at riddles—what do you make of that?"

"You want me to say that it has peculiar properties," she answered quietly. "That, in fact, it is responsible for projecting you a hundred years forward. But I don't know—and neither, I think, do you."

"Oh, yes, *I* do," said Mallory. "I know damn well! But it's good to find that the inhabitants of this brave new world are not omniscient after all. There are more things, Horatio, than are dreamt of in your telepathy." He began to laugh raucously and loudly.

She slapped his face. The laughter stopped suddenly. Mallory stared vacantly through the window. "Thank you," he said in an unsteady voice. "I'm sorry."

"You began your painting before you touched this Latakia," she said abruptly.

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"How did you come to paint my portrait?"

"It came in a dream," said Mallory in a toneless murmur. "It came in a dream, and I was haunted by the eyes of someone I would never know. Now, I have met you, and it is different. Because one cannot love the future: one can only be afraid, damnably afraid. Or mad. When did I die?"

"At the end of your life," she replied softly. "And that is when each of us dies, at the end of our life."

"The year," insisted Mallory. "What year? You said you knew!"

"I do know, but it is not good that I should tell you. Besides, I do not know the year in which you left your own world."

"Nineteen fifty-four," he said quickly. "What year did I die?"

The girl did not meet his gaze. For the first time she seemed unsure of herself. "Nineteen eighty-five," she said hesitantly. "I am as

stupid to tell as you are to ask."

"Liar," said Mallory cheerfully. "It's comforting to know that women haven't learned to lie any better. You might have fooled Harrys, but not me. I have painted your eyes."

"And what did you see there?"

"The truth!"

"What is the truth?"

"Ask Jesting Pilate," taunted Mallory.

"It is time you went back," she said quickly.

Mallory pointed to the clock. "I have abolished time. Time will stand still until I'm ready for it."

"It is dangerous to stay."

"I accept the danger," he said recklessly. "I have conquered time to find my ideal woman; and now I am told to go back. Your attitude, my dear, is essentially feminine. You should never have tempted a homeless ghost."

His vision was becoming blurred, but he could still see

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her eyes clearly. They spoke to him silently from a great distance. In them he recognised the truth of his own careless words. But already it was too late.

"What is your name?" he demanded, standing still and swaying like a drunken man. "Whose name shall I call when the stars are dark? Whose portrait shall I gaze at in this empty room?"

Now the room itself was fading. He could no longer see her. Yet, when she spoke, her voice was low and close.

"I am Ann," she whispered, "and you are John. Don't you see, we can't be ourselves because we are separated by time! You must go back! You must enter your own world again."

"Ann, where are you? I can't see any more! Give me your hand!"

She gave him her hand, hoping to lead him to the camp-bed and force him to relax. But with a sudden, surprising vigour, Mallory took

her in his arms, blindly seeking her lips.

The darkness became a whirlpool, and slowly the whirlpool grew into a sea of silence.

The hammer crashed again and again, relentlessly. Mallory opened his eyes slowly, very slowly. He looked towards the sound of the hammer. The clock fingers pointed to twenty-past eleven. The hammer blows subsided into a steady, even ticking.

Mallory looked about him in bewilderment and fear, half-expecting the room, with all its maddening stillness, to dissolve into yet another timeless dream. But the room remained, quiet and eloquent, mute with secrets. The only evidence of that strange interlude was the extra cup and saucer, lying by the side of the chair.

The cup was still warm—still bearing the imprint, thought Mallory bitterly, of those elusive lips.

He heard an echo of that voice—the soft, low voice that was a hundred years away . . . “*I am Ann, and you are John. Don't you see, we can't be ourselves because we are separated by time! You must go back . . .*”

“Blast it, I've come back!” he shouted hopelessly. “Back to a quiet dose of madness!”

Suddenly his gaze fell on the canvas. The blue-green, slightly luminous eyes met his own in a level, vacant stare. The lips were immobile, silent; and he knew that he would never again hear them speak—unless . . .

“Hell and damnation!” he sobbed, fighting the urge to shake and crush the canvas in an insane effort to force it into becoming the living woman.

Mallory fled from the room, afraid of doing violence to all that was left of his dream.

Down in the kitchen, his trembling fingers held the jar of Latakia. There were, perhaps, three fillings left. His

first impulse was to hurl the jar and its contents through the window; his second impulse was to preserve it carefully, against the time when he would recover the necessary courage to re-create, in his studio, the conditions for—madness.

Mallory shuddered, and replaced the tobacco in its accustomed hiding-place. There were beads of moisture on his forehead; for he knew now that his will was broken, and knew also that he could never enter that room again.

Two days later, haggard, unshaven, sleepless, he came to what appeared to be the only reasonable decision. Having made it, Mallory felt curiously free.

There remained but one or two letters to write. When they were finished, he went briskly about the task of hunting up a piece of old rubber piping he remembered seeing somewhere. Having found it, he made his way to the garage. He smiled grimly to himself, knowing that Colonel

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Harrys, at least, would have understood.

Later, the Coroner and other interested persons would doubtless dwell upon the unusual phenomena of a man committing suicide while calmly smoking his pipe.

Rone House had been empty and quiet for some time; though its reputation was not forgotten, and the executors were unable to sell it even at a ridiculously nominal price.

Prospective buyers would suspiciously inspect the attractive country cottage, testing every beam and floor-board, seeking some explanation for the tempting sum at which it was offered. The vendors, naturally, were vague and reticent. But the occasional prospective tenants would uncover a detailed and startling history (factual and otherwise) over a leisurely tankard at any of the nearby village taverns. Thereafter, as they were warned in slow country dialect, they pursued

the matter at their own risk. It was eighteen months before anyone did so.

He was a man in his early thirties, an impecunious novelist in search of solitude and atmosphere. A pleasant, intelligent young man, sceptical and credulous.

He picked his way up the grassy drive one fine spring morning with the agent's keys in his hands. In sunlight, Rone House looked an attractive proposition. The interior had been thoroughly cleaned and decorated. Even the old kitchen range seemed bright and serviceable.

The young man was not yet to know that in the disused oven there lay a stoneware tankard containing a few dark, brittle shreds. He surveyed the cottage with satisfaction, impulsively deciding that there, if anywhere, was the place to finish his book.

It was a fine, warm day; and the spring optimism was infectious. Oddly enough, the new tenant was a confirmed pipe-smoker.

Galileo Galilei

by H.J.C.

Legends in abundance have grown up around this seventeenth century man of science, and the great majority of them, though glamorous, are untrue. He is considered by many to be the man who first connected theory and experiment, and therefore, by taking the first definite step in the discovery and use of scientific reasoning, made one of the greatest achievements in the history of human thought. This legend is almost all true. The only thing wrong with it is that it does not adequately express what Galileo really did.

He was something of a martyr. Though they probably didn't actually burn the man, as some stories have it, they certainly threw him out of a good job as professor of mathematics at Pisa because he had the effrontery to state publicly that dear old Aristotle was wrong. Galileo was then 26. He had already done most of his fundamental work.

Galileo, who was brought up in an intellectual climate (if one can call it that) in which the thing to do if you wanted to find out something about the way nature worked was to look up what Aristotle said about it—and then take it as read, so to speak. Galileo was quite prepared to look up the teachings of Aristotle. But he had the temerity first to wonder how Aristotle had found out, and secondly to wonder how he, Galileo, could check on Aristotle's accuracy. It is difficult for us in these days to realise both the enormity of Galileo's offence against orthodoxy and the tremendous step forward this offence was where increase in natural knowledge is concerned.

Thinking around these things, Galileo evolved a method, crude in comparison to modern techniques, for arriving at the truth of things—or at least getting as near to the truth as facilities allowed; which is all we do

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today. All truths are only statistically true. Galileo pointed out that reading about nature was not enough, whether the writing had been done by Aristotle or anyone else. He also pointed out that mere observation of nature was not enough, since conclusions based upon mere immediate knowledge are simply intuitions, and therefore not necessarily true. He set out for the first time in history the idea of the investigator actually taking a hand in the phenomena he was investigating. Controlled experimentation began with Galileo. For the first time in history men of science started to alter nature in such a way that subsequent observations would show them what they wanted to know.

Today, some of the things that Galileo discovered and contradicted by this method seem a little absurd, but only because we have grown up in a rather more enlightened intellectual climate. It may seem funny to us that everybody believed Aristotle when he said that there were seven, and only seven, luminaries in the heavens. Proving that there are more by finding a few moons of Jupiter, as

Galileo did, may seem a not very wonderful thing to have done. Nor was it, in itself. You have to realise that the greatness of Galileo lay in the fact that he thought of doing it. Similarly, the classical experiments of dropping things from the leaning tower of Pisa are really nothing in themselves. It is the conception of them that takes the breath away once one has become familiar with the prevailing modes of thought of the time. Many of Galileo's ideas were wrong (for instance, he first thought that bodies might fall at a rate proportional to the distance through which they had fallen), but his genius made him test those ideas and prove them wrong; then to go on and find the right idea by suitable experimentation.

Bear in mind, too, when assessing Galileo's contributions to science, that he formulated the idea of relativity several hundred years before Einstein came along and extended its mathematical treatment; and that Newton's first law of motion is merely a slightly paraphrased version of Galileo's law of inertia. Quite a man, was Galileo Galilei!

The Liverpool Science Fiction Society

by DAVE GARDNER

THE LSFS came into being through the courtesy of the Milcross addressograph plates and a handful of people who were interested enough to turn up and see what could be done about forming a club. We graduated from a cafe society in November, 1951, to the proud possessors of our own club room called the *Space Dive* in January, 1952. It was decided then that the Society should be completely informal, despite the fact that we had elected officers and voted in a set of rules and regulations. Nobody's nose is put out of joint. No one pays the slightest attention to the chairman's calls to order, and the chairman wouldn't know what to do if anyone did. The resulting chaos is highly satisfactory.

Shortly after moving into the Society's premises it was

suggested that the country members were entitled to a slight consideration, justified by the fact that they were helping to swell the coffers. It was decided that a "news letter" should be issued to keep them in touch with the happenings in Liverpool. The "news letter" grew up on us, and almost before we knew what was happening we found ourselves publishing a fanzine called SPACE DIVERSIONS, which *Authentic's* editor classifies as the top home-product in this field of publishing. Here in Liverpool we refrain from comment, but the praise is appreciated, and we cannot restrain from boasting that at least two items from our contents pages have now appeared in pro mags.

During this period of settling-in and settling the settling-in bills, the Society

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did some publicity work for one of the town cinemas when it was showing "The Day the Earth Stood Still." That means we arranged a display in the foyer of the cinema, as well as one at the *Space Dive*, and stood outside the cinema distributing hand-bills and "news" papers to those lucky Liverpudlians who were not busy with fan activities, and who could afford a few hours watching the film in comfort whilst we froze to the pavement outside. It is cold in Liverpool in February, a bitter wind sweeps in from the Mersey.

July last year found the LSFS searching for new premises. The *Space Dive*, which happened to be a cellar, was suddenly required by the owner, for—dare we say it?—storing bananas! Thrown on the streets with model space ships, paintings, a library, and part of a skeleton (its appearance is still a mystery), the members searched feverishly for new premises. From one pub to another the trail led, until at

last, late in '53, we found a bar which appealed to all and hired a room for Monday night meetings somewhere above it. We are still there. The Stork Hotel now houses the LSFS, and it is there that we now do our entertaining, talking and drinking.

It has been said that even S-F has been discussed at one or two of the meetings; certainly the talk ranges far and wide in its scope, and encompasses anything from art or religion to rockets and motor-bikes. But parties are our strong point. We have never yet found an excuse not to have a party. We can always find an excuse *to have* a party. We are a friendly crowd. Nobody has yet been injured with an empty bottle—or a full one, though many have almost choked to death before a fast-emptying bottle could be dragged forcibly away from eager lips. These things are taken for granted, and no hangover has ever prevented plans for yet another "do."

You see, we are a com-

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pletely normal crowd of fans out to enjoy life and fanning. We hate nobody—or at least very few. We could gladly sever relations with anyone rash enough to suggest Liverpool should hold a convention one year. We are firmly decided that there shall be no convention in Liverpool until one of our members wins at least £75,000 on the pools. The chances of anything like that happening are fantastic, but not impossible. That is why we have stopped posting in coupons and filling in the “treble chance.” But should anything so dreadful as a for-

tune come into our hands we do know that the convention will be held on the Mersey aboard the *Royal Iris*. Who knows, one day there might be a Ferrycon. We hope not. We are lazy. Easy-going. We are cowards at heart. We would prefer to pull other people to pieces rather than be pulled to pieces ourselves. There is little fun in the latter!

D. S. GARDNER.

NOTE: Anyone wishing to join the LSFS should write to Dave Gardner, 63, Island Road, Liverpool, 19.

DO YOU KNOW YOUR STARS?

- (a) Which is the dimmest star?
- (b) Which is the brightest star?
- (c) Which is the nearest star?
- (d) Which is the largest star?
- (e) What is a shooting star?

Answers in next months issue

MARCH of SCIENCE

*A review of recent developments of ideas
in science*

It has been a common amusement for certain people with inelastic minds to belittle the idea of suspended animation as an adjunct to such things as journeys to the stars. They will have to retrench a bit now, for scientists at the National Institute for Medical Research at Mill Hill, London, have succeeded in suspending the animation of hamsters (a kind of guinea pig) by freezing them.

True, the hamster is naturally adaptable to body temperatures ranging from 2.5° to 38° C., but throughout that range they normally are still animated. In the experiments we are reporting on here the animals were taken down to somewhere in the region of -7° C., and both respiration and heart beat ceased. They were kept that way for periods up to 38 minutes and yet were successfully revived by special methods. There are indications, too, that the addition of propylene glycol to the animals' diet prior to freezing

may have beneficial effects, and this is now being actively investigated.

So science fiction stories in which people are refrigerated on a star trip are not all that far ahead of facts after all!



Yet another British contribution to radio astronomy comes from the researchers at Manchester University's Jodrell Bank Experimental Station, where soon there will be the largest radio telescope in the world. The latest work from these laboratories gives a method for the measurement of the distance of radio stars—those intriguing invisible celestial objects that pour radio waves onto Earth night and day. The method is based upon the absorption by intrastellar hydrogen of the radiation from the radio stars. Using this method, it has been found that the radio star in Cygnus is more than 9,500 parsecs from the Sun, and is therefore extragalactic; and

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that the radio star in Cassiopeia is somewhere between 500 and 2,500 parsecs from the Sun. Future work is aimed at making the method more precise and at extending it to the measurement of the distance of other radio stars.



One of the ways in which science keeps in contact with everyday life is seen in the various safety devices that turn up from time to time to meet new requirements and hazards of industry. A recent device that calls upon many branches of applied science is a beryllium estimator. Beryllium is one of the most toxic substances there is, and it is an essential material in atomic pile working. In order to protect pile workers from atmospheric beryllium, an instrument has been devised which draws a continuous chart of its concentration in the air of a workshop or laboratory. The instrument sucks in air constantly, sparks it between copper electrodes, analyses the spectrum with a diffraction grating, sends it through a slit where it falls

on a photocell and is amplified by an electron-multiplier thermionic valve; the current variations are then converted to pen lines on a chart and the workers can see at a glance just how much beryllium is in the air at any moment.



Ever since the physicists started doing things that occur in an incredibly small time, photographic researchers have been trying to introduce processes that will record such events. High-speed photography is now a fully-fledged technology—some might even call it a science. A recent development by a physicist at Cambridge University is capable of taking 50,000 photographs in one second, and a slightly different form of apparatus is said to take a million pictures a second. Basically, the system involves a plate made of many tiny lenses placed in front of a photographic plate. This assembly is placed behind an ordinary camera lens, giving an image made up of thousands of tiny dots.



FICTION

STRANGE ADVENTURES IN SCIENCE FICTION is the latest 9s. 6d. anthology from Grayson & Grayson (16, Maddox Street, London, W.1). It's a collection of nine American reprints, edited by Groff Conklin. Authors are James Blish (*The Box*), Damon Knight (*Catch that Martian*), David H. Keller (*The Doorbell*), Theodore Sturgeon (*Never Underestimate*), W. Hilton-Young (*The Choice*), Chester St. Geier (*Environment*), John D. MacDonald (*Spectator Sport*), A. E. van Vogt (*Recruiting Station*) and Murray Leinster (*Plague*). Some of these names are not seen very often, which indicates the expected development of anthologists getting near the bottom of the barrel. Even so, this is a book that will not disappoint the majority of readers, though

there may be a few of the ultra-fastidious kind who will feel that only a couple of the stories are worthy of hard-cover preservation. It can be recommended with confidence.

Wright & Brown (18, Stukely Street, London, W.C.2) have entered the science fiction field with *INVASION FROM SPACE*, by Nigel MacKenzie, at 6s. 6d. It would seem that this is the first science fiction book that Mr. MacKenzie has written, so it is perhaps not surprising that it is not science fiction. Omnipotent, gold breast-plated, brutal, moronic invaders come from Mars in flying saucers and start throwing their weight about in the time-dishonoured fashion. It's the old business of submit—or else. They've got one flying saucer in every country and that's quite

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enough to enable them to destroy the world, for after all they have "captured the secrets of the universe" whereas we on Earth "are merely scratching at the surface of knowledge." Naturally, this kind of guff comes over the radio soon after the ship has landed and, hearing it, "The six men in the Prime Minister's study stared at each other. Their faces had gone a sickly green; their vocal chords seemed to have been paralysed with shock." Mr. MacKenzie, Mr. Wright and Mr. Brown—spare us, please, such trite, ignoble plots; such Victorian-novelette dialogue; such vapid, dripping love affairs. If you do this to us again, why, our very hearts will break.

Juvenile science fiction *can* be done in a dignified, worthwhile fashion, and Richard Marsden has done just that in his *ROCKET TO LUNA*, which Hutchinson's (Stratford Place, London, W.1) have brought out at 7s. 6d. Though written in the simple terms and pattern required for the younger reader, and lacking in the nuances of character and plot that give depth to the adult book,

Rocket to Luna is yet a story that can be read with profit by science fiction fans of all ages.

As you would expect, the plot revolves around a young person—a senior student at the Air Force Academy. His particular conflict is that he gets caught up in the first Moon rocket by mistake, much to the annoyance of most of the crew. He has a champion among them, of course, but on the whole he has a pretty rough time on the journey and on the Moon until he proves that he's not such a greenhorn after all by bringing the ship (which has been crippled in space) down gently and safely, and by doing a bit of smart work in the matter of dwindling food supplies.

Apart from this rather understandable exaggeration of plot devices, the book has only one other important fault. That is that it is scientifically inaccurate in several places. This magazine insists that a story is done no harm by being accurate, whereas young minds are given that much extra to unlearn by a story that is shaky on facts. We hope that Mr.

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Marsden will give us more novels along the lines of this one, but we hope, too, that he will take a few steps towards removing this easily-avoided defect.

MUTANT, by Henry Kuttner, is the latest 9s. 6d. novel from the science fiction shelf of Weidenfeld & Nicholson (7, Cork Street, London, W.1). It runs on lines rather similar to *Slan*, and though not quite as powerful as that classic, we think that *Mutant* is a good story. There has been a wave of radioactivity following "The Great Blow-Up." There has been a wave of mutant births in the following generation. Hairless, with oval skulls and telepathic minds, the mutants, as you would expect, come in for a good deal of criticism by "normal" humanity. Vast sections of the population actively hate the mutants, and not perhaps without good reason, though poor excuse. For many of the mutants hated humanity and were pledged to wipe it out. Some of them are all right. Some of them believe that mutants can live happily and equally with humans. Some of them believe that mutants can help humanity. *Mutant*

is about the struggles of these decent mutants — struggle against prejudiced humanity and struggle against "rene-gade" mutants.

Kuttner, as you would expect, tells his piece crisply and rapidly, making real people out of even the freaks, letting them talk in the way people really do talk. The story flows smoothly and enticingly from beginning to end. Read it. You'll like it.

NON-FICTION

Chemistry seems to be one of the sciences that has a special attraction to science fiction readers, though few are able to get much change out of the standard books on the subject. A textbook that should meet the requirements of such readers is FUNDAMENTALS OF INORGANIC, ORGANIC AND BIOLOGICAL CHEMISTRY, by Joseph I. Routh, Ph.D., published at 20s. by W. B. Saunders (7, Grape Street, London, W.C.2). This is a thoroughly modern book (American in origin and style) beautifully produced and illustrated. The main emphasis is always on the part that chemistry plays in the practical world, and the principles of the science are ex-

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pounded via the medium of everyday materials and processes. Not often does one find a chemistry textbook that illustrates the topic of synthetic fibres with a photograph of a mannequin dressed in a negligee! Necessarily in such a small book of such wide scope, the branches of chemistry are not dealt with exhaustively. But there can be no doubt that this book contains sufficient to give the reader a sound understanding of what chemistry is all about and the part it plays in the world. Very highly recommended.

Photographers will welcome the appearance of the second edition of *NEW HOME PHOTOGRAPHY*, at 2s. 6d., from Johnsons of Hendon (335, Hendon Way, London, N.W.4), which covers an enormous amount of ground in a perfectly complete and thorough manner. Designed for the "small" photographer, this book sets out the basic theory and practice of photography, and makes it clear that with modern materials even amateurs can do a great deal more than take "snaps." The book is lavishly illustrated and pleasantly produced. It is very highly

recommended for all who like to take pictures.

The Everyman Library has added to its long list of valuable books another title that should be in the possession of all serious readers of science fiction. This is *A NEW THEORY OF VISION AND OTHER ESSAYS*, by George Berkeley, published by Dent (10-13, Bedford Street, London, W.C.2), at 6s. Berkeley was perhaps the most misunderstood philosopher of all time, and we welcome this book because, in small and inexpensive form, it will bring to a wide public the ideas of Berkeley and thus increase the chances of their being examined afresh with greater understanding. It is commonly said that Berkeley's main thesis was that only mind exists and that the "real" world is merely imaginary. He said nothing of the kind, though he did point out serious objections to the view that what we see, hear and feel is what is. His essay on the new theory of vision is really an exposition of philosophical principles that connect objects with sensations and awareness. His *Treatise Concerning the Principles of Human Knowledge* (also in-

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cluded in this book) is something that can be read with profit by all those science fiction devotees who believe they have the secret of it all! The last section of this book is the *Dialogue between Hylas and Philomas*, which are amusing, saddening, exciting, confusing and thoroughly worth reading. Do buy this book and struggle through it.

Now and then we come across a book the content of which is highly laudable but the production of which leaves much to be desired. This is better than the converse, of course, but is very disappointing nonetheless. Such a book is *A CONCISE HISTORY OF MATHEMATICS*, by Dirk J. Struik, published by G. Bell (York House, Portugal Street, London, W.C.2), at 14s. The binding is good, the paper is delightful, the illustrations are perfect. But something has gone wrong with the typography. To our eyes it looks really awful and we're sure it will put people off buying the book. We can't lay our finger on the precise defect, but the overall impression is that the pages look archaic. However, the words themselves are excellent. The author

has done a fine job of tracing the roots of mathematics through all its devious by-ways and controversies of the past. One fault we would find is that from the middle onwards he takes too much for granted about the reader's knowledge of mathematical notation; the book would be considerably improved by a few footnotes explaining what some of the less common signs and symbols mean. We cannot recommend this to the reader who has little knowledge or interest in mathematics, for it is far from anecdotal. But anyone with such knowledge and interest will be well rewarded by a reading of this scholarly work.

For people with the kind of mind that wants to know the chequered history and development of common things, *PLANTS, MAN AND LIFE*, by Edgar Anderson, will be a gift from heaven. Published by Andrew Melrose (Stratford Place, London, W.1), at 15s., this is a book that this reviewer will read again and again—and there are few like that. The range of ideas and research remind one of Willy Ley's *Dragons in Amber*, though here we are dealing with cultivated plants, crops

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and flowers. The author has a most commendable style, simple, direct and almost hypnotic in its power to keep you reading. The whole topic of the history of cultivated plants is put over in a way that captures the imagination of even the most unacademic person. Here are some of the chapter titles, indicative of the popularity of presentation: "The History of Weeds—A Detective Story," "How to Measure an Avocado," "Rubbish - Piles and the Origin of Agriculture."

But this is not solely a matter of nice, gentle reading. Dr. Anderson demonstrates by factual evidence what all thinking persons must have suspected for many years — that the insufficiency of world food supplies is not an irremediable condition. With laudable frankness he points out that science has many skeletons in the closet where this question is concerned. He also shows what kind of an improvement could be made if apathy, neglect and negligence could be

swept away. Not frequently do we find a book of such value as this. The price is extremely low for the enormous wordage and quality of this intriguing book. We recommend it most highly.

FUN WITH FIGURES, by L. H. Clarke, published by Heinemann (99, Great Russell Street, London, W.C.1), at 6s., contains 140 puzzles of various kinds, together with very full solutions. Though one or two of them are non-numerical and a little silly (Question: How did they know he was a Lieutenant? Answer: By his uniform), the majority are very entertaining, and not a little instructive. A new idea is numerical crosswords — something that we predict will become very-popular in the future. The reader is expected to know mathematics up to advanced level G.C.E. in order to tackle all the problems, but those with the average knowledge of this subject will be able to have a try at the great majority of them. A useful book for filling in odd moments.



Projectiles

OVERSEAS SECTION

AXE

I have quite a few of your magazines and really enjoy reading them. You certainly keep them up to scratch. I am not much chop at writing, but I have now sat me down with pen and ink while my wife is at last induced to read the best I have yet seen you turn out—No. 43. But my axe falls on the first story, by Houston Brunner. Ugh! “*He screamed—silently.*” Ugh! again. Sorry, I don’t like that type. Which brings me to the one by Richard Wilson, *Mary Hell’s*. Very good indeed. If they can make a motion picture of *Highway i* (*Authentic* No. 39) (congrats!), show them *Mary Hell’s*. It would be a smash hit. Can’t something be done to introduce these producer-

directors to more of these grand stories? ’Twould be better than half the tripe dished up on the screen nowadays.

N. Crynes, 135 Diosma Crescent,
Nunawading, Melbourne.

Probably better than all the tripe, Mr. Crynes! Thanks for your praise. We hope you like Wilson’s story in this issue as much as you liked his other one. We do.

SECOND PLACE

In my opinion, Berry’s novel *The Hidden Shepherds* is the best you’ve featured since *My Name is Ozymandias* in No. 36. But you still rate only second best as far as my knowledge of science fiction goes. Keep it up!—you’ll get to first yet. Roger S. Cook, 3 Haig Avenue, Ryde, Sydney, Australia.

So tantalising, Roger, that you did not tell us whom you consider to be the best! Do you mean second best in the whole world? Even that is some-

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thing of an achievement for a magazine as young as this, eh? Tell us, do, when you think we get to the top.

HUSH, LADY!

A friend in Scotland recently sent me one of your *Authentic*s which contained a letter from a Mr. Mercer—he won the star letter prize. I really don't see why; not that his effort wasn't good in some ways, but it was not polite nor showed much thought. I realise that telling him of it may not be courteous either, so I say this is only one personal opinion, as was his letter. I like *Authentic*. I like its covers too, though I'd prefer them minus the printing on the picture.

Mr. Mercer omitted the fact that man learned, and is learning, to fly by the process of inventive thought and mechanical creations, not by physical aptitude as all other flying creatures did. *Please*, Archie, don't compare the Wright brothers or Howard Hughes with a Pterodactyl! Flight of man *is* wonderful! And if you had been the first to return from a round trip to the Moon it would be sure to have stood you in good stead for the rest of your life as a conversational subject. Also, I'm sure *Authentic's* "reason for being" is not to hasten or to postpone any space travel,

but to promote interest, entertainment and income; and those are fine objectives.

All success to them! I'm an old reader of science fiction. I've read it in preference to other literature for twenty-odd years, and it is still my favourite subject. I'd be pleased to exchange letters with Mr. M, should he wish to compliment me thus. And, writing to strangers being a hobby of mine, I won't mind if he criticises me.

Mrs. A. Wilkins, R.F.D.1,
Wakefield, Rhode Island, U.S.A.

Hush, lady! You mustn't speak of Archie like that! He's our tame jester and we'd be very hurt if you made him cry—not that he's very likely to. Anyway, you've brought enough punishment on yourself by offering to receive letters from him. So we'll let you off with a light sentence—write us another interesting letter, please.

WHAT WAS THAT?

I am a science fiction fan. I hereby formally declare that I am opposed to space travel, for these reasons: (1) if we meet an alien civilisation, the difference between the two species would probably be tremendous. There's not much real hope that we'd see eye to eye. Such alien cultures could probably meet only in war. (2) Cosmic radiation could produce virulent mu-

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tated species of bacteria, or another planet might do worse. (3) Space travel would eat up finance. Distances between worlds are too great for effective trade, and the setting up of human settlements on Mars and the Moon would increase taxes on Earth. There are other reasons, but these will do. A wise government and people, I say, would decide that the space travel idea is escapist, ultra-romantic and unreasonable, and human destiny lies, not in spanning the universe, but in developing the Earth. There's an enormous amount to be done right here, without clearing out elsewhere. Well, who's with me? (Good luck to *Authentic!*).

J. Blair, Robbins Street, Hurstville, Sydney, Australia.

Mr. Blair, go sit you down in a darkened room and think a while, this time more clearly. To help you, consider these points: (1) Alien civilisations have been meeting for centuries. At first they fight, maybe. Ultimately they settle down at peace, to their mutual benefit. "Hope of seeing eye-to-eye" must spring eternal in all men and all lands if humanity is to endure. (2) Virulent mutations are coming into being all the time, on Earth. We learn to handle them, eventually. Ostriches don't, though. (3) So many things eat up finance, Mr. Blair; so many unworthy, degrading things. If we are going to burn our

money, let its flame shine on something constructive, eh? (4) The development of Earth is merely a part of the development of mankind. Progress on Earth has ever been made by the kind of people who wish to conquer space. (5) Wouldn't you be happier alone on a desert island?

HOME SECTION

NOTHING BUT CLUBS!

The Portsmouth Science Fiction Group—little known because it has met in the kitchens of members—is now in a position to enlarge itself. This happy state of affairs is brought about by the assistance of the local science fiction bookseller, who has offered his premises as a meeting place. Any fans living in or around the Portsmouth area may obtain details by writing to The Secretary, Portsmouth Science Fiction Group, c/o 235 Lake Road, Portsmouth. At the moment the aim is to bring together interested fans for the purpose of discussing topics relating to and allied with science fiction.

P. W. Cutler, 333 Arundel Street, Landport, Portsmouth.

I should like to get a group active in Lincoln. I already have four or five people coming in regularly to discuss astronomy, interplanetary travel, flying saucers, science fiction, etc. I have a small collection of technical and non-fiction books, and also about 300 science fiction

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magazines, besides a small collection of astronomical paintings and photos. I had a brief notice in the local press recently, but it didn't produce any members.

P. Hammerton,
20 Boultham Avenue, Lincoln.

I hope that you'll give some publicity to the L.S.F.O., which is a postal library for fans. There are four branches, in Prestwick, Redditch, California and Wimbledon (H.Q.). There are over 1,000 items to choose from—books, magazines, pocket-books, etc. Any member can borrow stock from any branch. Membership is *free*. A monthly circular dealing with library news is *free* to members. There are no set dues, each member paying with books or money what he or she thinks the service is worth. And there is no set limit on the time that books may be borrowed for.

John B. Hall, 68 Leopold Road,
Wimbledon, S.W.19.

Three in one month is certainly something that we'd like to see again and again. We wish these projects the very best of luck, and extend the welcome of our pages to any other people who would like to help build up science fiction fandom at home or abroad. There must be dozens of towns with enough readers to form a small club. You may be living next door to one and not know it. If you're prepared to do

a little work in founding a club, write and tell us. Authentic has already been the first link in the formation of at least four clubs. Yours could be the next.

OI!

I have just read your issue No. 45 which you claim to be science fiction, but surely that is a shocking misnomer, for the stories are "fantastic" though the serious articles justify the term scientific. Science is defined as "knowledge derived from *observed facts*, systematically arranged." (*Tisn't. You can't define it: Ed.*). Scientific speculation is fully justified as a useful tool in making progress, and one must regard science fiction clearly as a further step beyond speculation (*Why?: Ed.*). But to justify the term science fiction it must not depart from, or contradict, known facts, (*don't you mean theories?: Ed.*) *i.e.*, it must not be absurd. Time travel and dimensional travel of physical bodies and also telekinesis are clearly absurd (*Even three dimensional travel?: Ed.*) for they all essentially require utter annihilation of matter in one place and time, *i.e.* total conversion into energy a process considerably beyond nuclear fission. (*Not so. You can transport a gas through another gas. Still got your matter, huh?: Ed.*). The transfer of the prodigious energy resulting to some other place and the recreation

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from that energy of identical matter in all its stupendous complexities—that is absurd. (So? How'd you think you were made? Didn't the sugars in your baby-goo release their energy to be built up into the same sugars in your liver? Ed.). Calculate the energy released by total annihilation of a person of average weight (Just how heavy is that? Ed.), then consider the transmission by radio of all that energy without loss, bearing in mind that only milliwatts can now be transmitted to a distant spot, and above all consider the recreation of all the elements involved with atoms arranged in correct molecular patterns! (I've done all that. Now what? Ed.)

For over forty years I have read all kinds of stories, Jules Verne, H. G. Wells, etc., up to the modern spate of these fantastic kind of stories, and, though I am an inventor with considerable scientific knowledge, I have not yet found one single idea that was worth serious consideration. (Plenty of scientists have, feller. Ed.) I know that it is claimed by scientific fiction fans that every new advance has been forecast by them, but that is simply not true. (It is also daft. Ed.) This brings me to the cover of your No. 45 issue of a "starship" and its description "Accurate, scientific, exciting." This is the way it will not happen. Granted that in propulsion it would be advanta-

geous to have the high velocity of ions or better still canal rays, unfortunately electrical phenomena require a closed-circuit operation if continuous and, therefore, as electrically charged ions are discharged there will be an increasing opposite charge on the ship, which ultimately pull back all the ions being discharged so that there will be no rate of change of momentum to provide thrust for propelling the ship. (Tell that to Arthur C. Clarke and R. A. Smith. They designed that ship. Ed.)

G. W. Walton, Banna Boo,
Farnham Common, Bucks.

Unfortunately, Mr. Walton, as with many inventors, it would seem that you haven't the range of scientific knowledge that would enable you to look at these things with an unbiassed mind, but yet have enough such knowledge to act as a kind of manacle on your imagination. We're very sorry, really. You're missing so much.

BARGAIN

I have Nos. 1 to 45 of *Authentic*, as new, also fifteen assorted sf magazines. I would take £2 2s. for the lot. It grieves me to have to sell *Authentic*. My only reason is that I haven't the room.

Anthony Bawden, 6 Trecarrel,
Launceston, Cornwall.

Haven't got the room? Burn the furniture, man!

AS HEALER. One Lady writes: "My sister suffered very badly for years, but since I gave her a Joan the Wad to keep near her she is much easier. Do you think this is due to Joan or the water from the Lucky Well?"

AS LUCK BRINGER. Another writes: "Since the war my wife and I have been dogged by persistent ill-luck and we seemed to be sinking lower and lower. One day someone sent us a Joan the Wad. We have never found out who it was, but, coincidence if you like, within a week I got a much better job and my wife had some money left her. Since then we have never looked back and, needless to say, swear by 'Queen Joan'."

AS MATCHMAKER. A young girl wrote and informed me that she had had scores of boy friends, but it was not until she had visited Cornwall and taken Joan back with her that she met the boy of her dreams, and as they got better acquainted she discovered he also has "Joan the Wad."

AS PRIZEWINNER. A young man wrote us only last week: "For two years I entered competitions without luck, but since getting Joan the Wad I have frequently been successful although I have not won a big prize. But I know that . . . who won £2,000 in a competition has one because I gave it to him. When he won his £2,000 he gave me £100 for myself, so you see I have cause to bless 'Queen Joan'."

DO YOU BELIEVE IN LUCK ?

HURRY

Mrs. WILSON, of Falmouth, says, 1951:
Since receiving Joan the Wad . . . my husband's health has improved 100%

Mr. Jones, of Cheltenham, says, 1951:
...Send me J. O'Lantern. Since receiving Joan the Wad have won two 1st prizes in Crosswords . . .
John Bull and Sunday Chronicle.

SEND NOW

JOAN



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If you will send me your name and address, a shilling and a stamped addressed envelope for reply, I will send you a history of the Cornish Piskey folk, and the marvellous miracles they accomplish.

ASSPECULATOR.

A man writes: "I had some shares that for several years I couldn't give away. They were 1/- shares and all of a sudden they went up in the market to 7/9. I happened to be staring at Joan the Wad. Pure imagination, you may say, but I thought I saw her wink approvingly. I sold out, reinvested the money at greater profit and have prospered ever since."

All you have to do is to send a shilling (savings stamps accepted) and a stamped addressed envelope for the history to

444, JOANS COTTAGE, LANIVET, BODMIN, CORNWALL, ENG.

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The SUPER MANCON

This is the first opportunity we have had of making a short report on the Science Fiction Convention held in Manchester last Whitsun, but although it is rather late, we feel that such a report will be welcomed by readers who were unable to attend.

Unfortunately, our Editor had to turn back when he was halfway there and, much to his disappointment, missed the whole thing. So this report is based upon the accounts of other witnesses; if it is inaccurate in any respect, don't blame us!

Well, it appears that, as often happens at these affairs, the official programme was not carried through without a hitch, to say the least. But again, as usually happens, it didn't seem to matter a bit. The gaps that occurred spontaneously in the programme were interestingly filled by the audience itself, which included a goodly crew from London, Liverpool, Cardiff, Gillingham and other fan centres. The total attendance was said to be in the region of 100—about a half of the usual London audience, which is pretty good, considering the lure of the metropolis and the large concentration of fans in the capital.

But by all accounts the real joy of the Convention were the parties that were held in the evenings in a kind of chain reaction through the various hotel rooms rented by fans. It is said that much talking was done!

The Mancunians turned up in force, of course, and demonstrated that fandom in that town is far from senile. Nevertheless, the experience of running their first full-scale Convention seems to have sobered them a bit. According to all reports they are not at all eager to have next year's Convention in Manchester! And who can blame them? Organising a Con. is a thankless task in many ways. However, we salute Manchester fandom for being the first provincial town to hold a "big" Convention and making everybody happy at it. Who's next?

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